# Industrial

# Wireless Access Point

## IAP-120 / 120+ User's Manual

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# Getting to Know Your Access Point

## 1.1 About the ORing Access Point

IAP-120 / 120+ are reliable IEEE802.11b/g WLAN with 2 ports LAN Access Point. It can be configured to operate in AP/Bridge/Repeater/AP-Client/Client mode. You can configure IAP-120 / 120+ by Window Utility or WEB interfaces via LAN port or WLAN interface. IAP-120 / 120+ provide dual Ethernet ports in switch mode, so you can use Daisy Chain to reduce the usage of Ethernet switch ports. IAP-120+ also provides P.D. feature on ETH2 which is fully compliant with IEEE802.3af PoE specification. Therefore, IAP-120 / 120+ are one of the best communication solutions for wireless application.

## 1.2 Software Features

- High Speed Air Connectivity: WLAN interface support up to 54Mbps link speed connection
- Highly Security Capability: WEP/WPA/WPA2/Radius/TKIP supported
- Support AP/Bridge/Repeater/AP-Client/Client Mode
- Switch Mode Supported: Daisy Chain support to reduce usage of switch ports
- Secured Management by HTTPS
- Event Warning by Syslog, Email, SNMP Trap, Relay and Beeper

## 1.3 Hardware Features

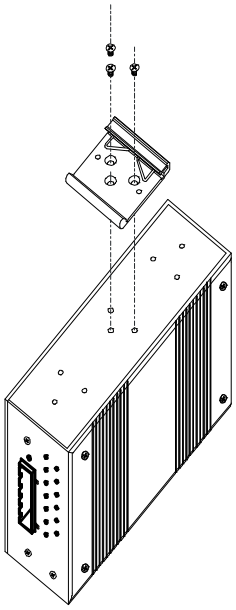
- Fully Compliant with IEEE802.3af (Power Device at ETH2, IAP-120+ only)
- Redundant Power Inputs: 12~48 VDC on terminal block
- 10/100Base-T(X) Ethernet port
- Casing: IP-30
- Dimensions(W x D x H) : 52 mm(W)x 106 mm( D )x 144 mm(H)
- Operating Temperature: -10 to 55$^{o}$C
- Storage Temperature: -40 to 85$^{o}$C
- Operating Humidity: 5% to 95%, non-condensing

# Hardware Installation

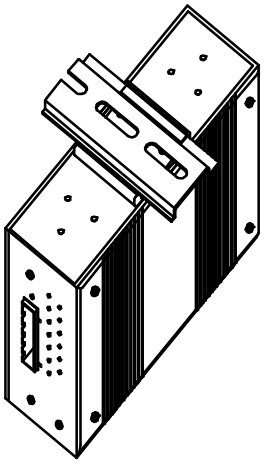
## 2.1 Installation AP on DIN-Rail

Each AP has a DIN-Rail kit on rear panel. The DIN-Rail kit helps AP to fix on the DIN-Rail. It is easy to install the AP on the DIN-Rail:

Step 1: Slant the AP and mount the metal spring to DIN-Rail.



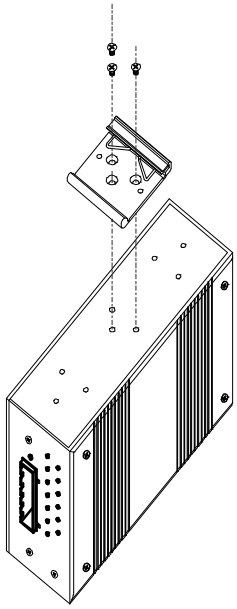
Step 2: Push the AP toward the DIN-Rail until you heard a "click" sound.



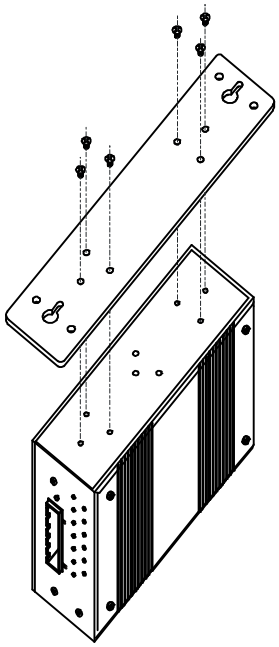
## 2.2 Wall Mounting Installation

Each AP has another installation method to fix the AP. A wall mount panel can be found in the package. The following steps show how to mount the AP on the wall:

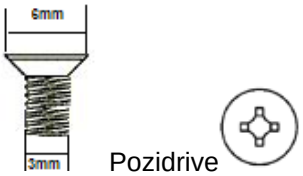
Step 1: Remove DIN-Rail kit.



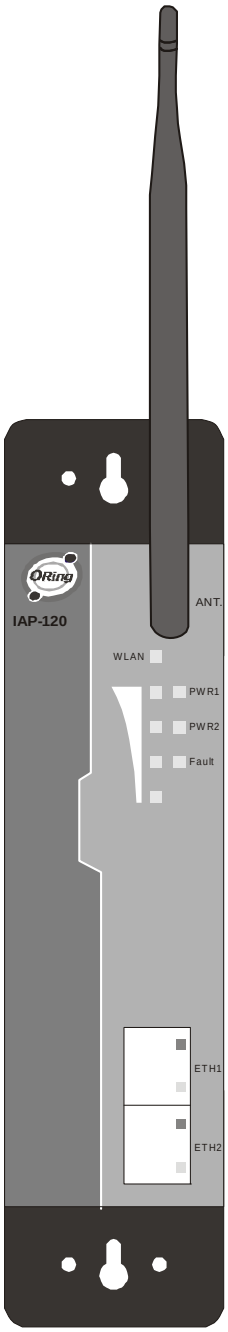
Step 2: Use 6 screws that can be found in the package to combine the wall mount panel. Just like the picture shows below:



The screws specification shows in the following two pictures. In order to prevent the AP from any damage, the screws should not larger than the size that used in IAP-120 / 120+.




Step 3: Mount the combined AP on the wall.



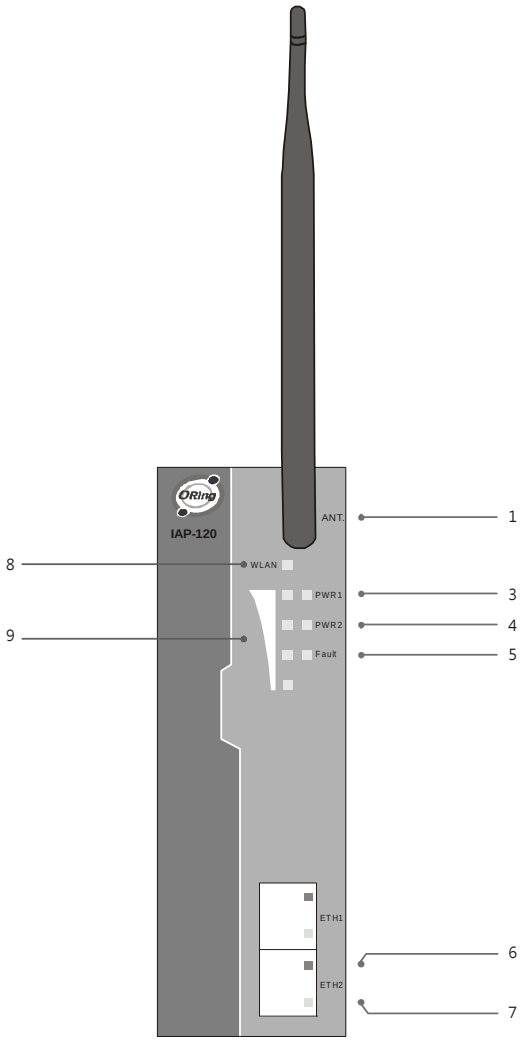
# Hardware Overview

## 3.1 Front Panel

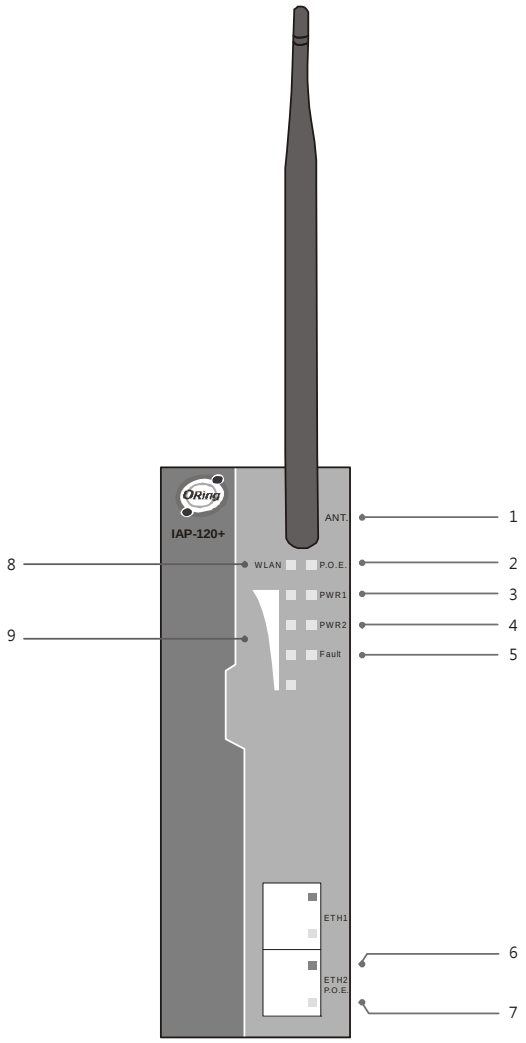
The following table describes the labels that stick on the IAP-120 / 120+.

| Port | Description |
|---|---|
| **10/100 RJ-45 fast Ethernet ports** | 2 10/100Base-T(X) RJ-45 fast Ethernet ports support auto-negotiation.<br>Default Setting :<br>Speed: auto |
| **PoE P.D. Port** | ETH2 of IAP-120+ compliant with IEEE802.3af PoE specifications |
| **ANT.** | Reversed SMA connector for high gain external antenna. |

IAP-120




IAP-120+




1. 2.4GHz antenna with typical 3.0 dbi antenna.
2. LED for PoE power and system status. When the PoE power links, the green LED will be light on.
3. LED for PWR1 and system status. When the PWR1 links, the green LED will be light on.
4. LED for PWR2 and system status. When the PWR2 links, the green LED will be light on.
5. LED for Fault Relay. When the fault occurs, the amber LED will be light on.
6. 10/100Base-T(X) Ethernet ports. (IAP-120+ contains P.D. function of PoE)
7. LED for Ethernet ports status.
8. LED for WLAN link status.
9. LED for WLAN signal strength.

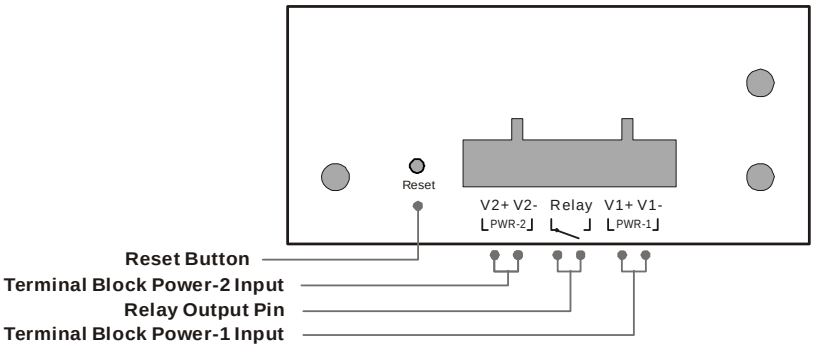
## 3.2 Front Panel LEDs

| LED | Color | Status | Description |
|---|---|---|---|
| **P.O.E. (IAP-120+)** | Green/Red | Green On | PoE power connected. |
| | | Green blinking | Device been located |
| | | Red blinking | Indicates an IP conflict, or DHCP or BOOTP server did not respond properly |
| **PWR1** | Green/Red | Green On | DC power 1 activated. |
| | | Green blinking | Device been located |
| | | Red blinking | Indicates an IP conflict, or DHCP or BOOTP server did not respond properly |
| **PWR2** | Green/Red | Green On | DC power 2 activated. |
| | | Green blinking | Device been located |
| | | Red blinking | Indicates an IP conflict, or DHCP or BOOTP server did not respond properly |
| **Fault** | Amber | On | Fault relay. Power failure or Port down/fail. |
| **WLAN** | Green | On | WLAN activated. |
| | | Blinking | WLAN Data transmitted. |
| **WLAN Strength** | Green | On | WLAN signal strength. 1<25%, 2<50%, 3<75%, 4<100% |
| **10/100Base-T(X) Fast Ethernet ports** | | | |
| **10Mbps LNK/ACT** | Amber | On | Port link up at 10Mbps. |
| | | Blinking | Data transmitted. |
| **100Mbps LNK/ACT** | Green | On | Port link up at 100Mbps. |
| | | Blinking | Data transmitted. |

## 3.3 Bottom Panel

The bottom panel components of IAP-120 / 120+ are showed as below:

1. Terminal block includes: PWR1, PWR2 (12 ~ 48V DC) and Relay output (1A@24VDC).
2. Reset bottom. Push the bottom 3 seconds for reset; 5 seconds for factory default.

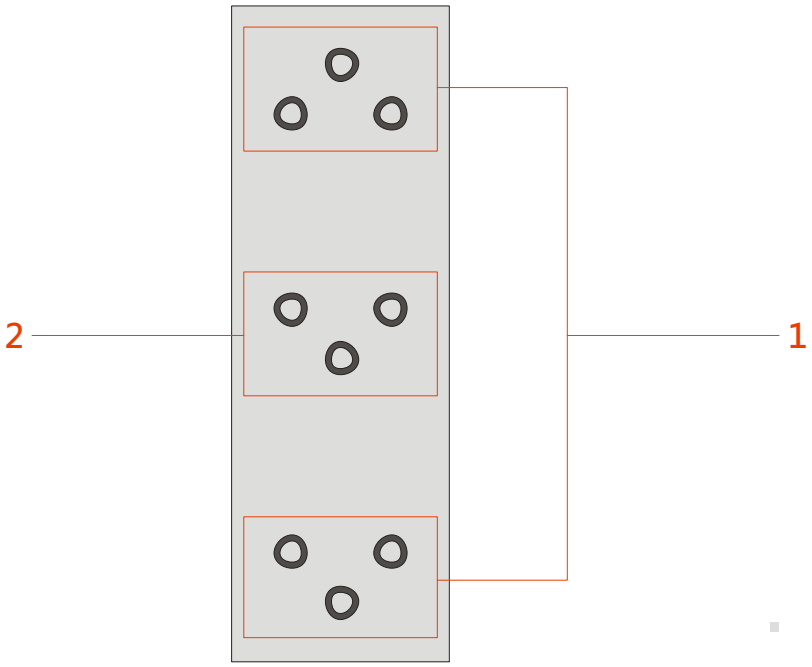



Bottom panel of IAP-120 / 120+

## 3.4 Rear Panel

The rear panel components of IAP-120 / 120+ are showed as below:

1. Screw holes for wall mount kit.
2. DIN-Rail kit




Rare panel of IAP-120 / 120+

# Cables and Antenna

## 4.1 Ethernet Cables

The IAP-120 / 120+ WLAN AP have standard Ethernet ports. According to the link type, the AP use CAT 3, 4, 5,5e UTP cables to connect to any other network device (PCs, servers, switches, routers, or hubs). Please refer to the following table for cable specifications.

Cable Types and Specifications

| Cable | Type | Max. Length | Connector |
|---|---|---|---|
| 10Base-T | Cat. 3, 4, 5 100-ohm | UTP 100 m (328 ft) | RJ-45 |
| 100Base-T(X) | Cat. 5 100-ohm UTP | UTP 100 m (328 ft) | RJ-45 |

## 4.2 100Base-T(X)/10Base-T Pin Assignments

With 100Base-T(X)/10Base-T cable, pins 1 and 2 are used for transmitting data, and pins 3 and 6 are used for receiving data.

RJ-45 Pin Assignments

| Pin Number | Assignment |
|---|---|
| 1 | TD+ |
| 2 | TD- |
| 3 | RD+ |
| 4 | Not used |
| 5 | Not used |
| 6 | RD- |
| 7 | Not used |
| 8 | Not used |

The IAP-120 / 120+ AP support auto MDI/MDI-X operation. You can use a straight-through cable to connect PC and AP. The following table below shows the 10Base-T/ 100Base-T(X) MDI and MDI-X port pin outs.

MDI/MDI-X pins assignment

| Pin Number | MDI port | MDI-X port |
|---|---|---|
| 1 | TD+(transmit) | RD+(receive) |
| 2 | TD-(transmit) | RD-(receive) |
| 3 | RD+(receive) | TD+(transmit) |
| 4 | Not used | Not used |
| 5 | Not used | Not used |
| 6 | RD-(receive) | TD-(transmit) |
| 7 | Not used | Not used |
| 8 | Not used | Not used |

**Note:** "+" and "-" signs represent the polarity of the wires that make up each wire pair.

## 4.3 Wireless Antenna

A 2.4GHz antenna is used for IAP-120 / 120+ and connected with a reversed SMA connector. External antenna also can be applied with this connector.

# Management Interface

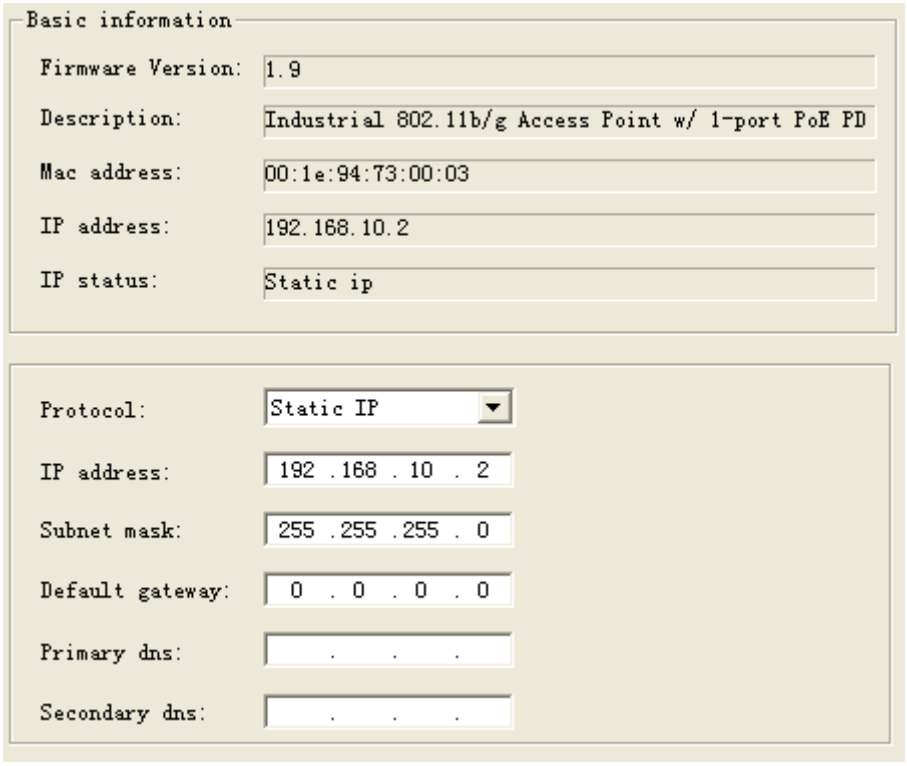
## 5.1 Explore IAP-120 / 120+

### 5.1.1 AP-Tool software

Each model contains friendly software, AP-Tool, to explore IAP-120 / 120+ on local area network.

Step 1: Open the AP tool and click "Refresh list", the AP devices will show on the list.

Step 2: Choose your access point, and it will show the AP attribute. Simultaneity, you can manual set the AP's IP address.

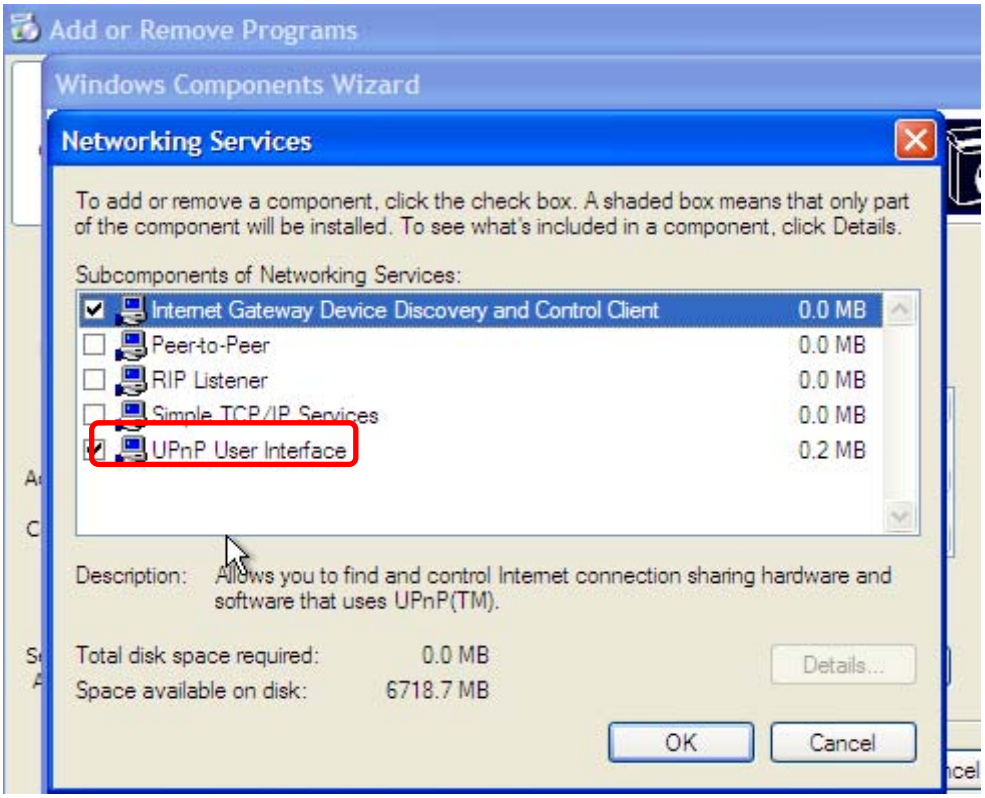

Basic information
Firmware Version: 1.9
Description: Industrial 802.11b/g Access Point w/ 1-port PoE PD
Mac address: 00:1e:94:73:00:03
IP address: 192.168.10.2
IP status: Static ip
Protocol: Static IP
IP address: 192 .168 . 10 . 2
Subnet mask: 255 .255 .255 . 0
Default gateway: 0 . 0 . 0 . 0
Primary dns: . . .
Secondary dns: . . .

User interface of AP-Tool

Step 3: Click "Access via web" button, it will go to web page.

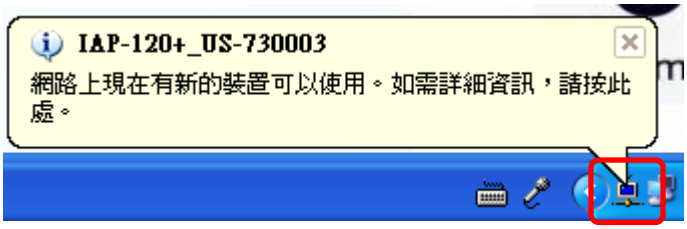
## 5.2 UPnP Equipment

Step 1: To check whether the UPnP UI of the computer is connected to the IAP-120 / 120+, go to **Control Panel > Add or Remove Programs > Windows Components Wizard > Networking Servers > UPnP User Interface** and pitch on the UPnP User Interface.


Add or Remove Programs
Windows Components Wizard
Networking Services
To add or remove a component, click the check box. A shaded box means that only part of the component will be installed. To see what's included in a component, click Details.
Subcomponents of Networking Services:
Internet Gateway Device Discovery and Control Client 0.0 MB
Peer-to-Peer 0.0 MB
RIP Listener 0.0 MB
Simple TCP/IP Services 0.0 MB
UPnP User Interface 0.2 MB
Description: Allows you to find and control Internet connection sharing hardware and software that uses UPnP(TM).
Total disk space required: 0.0 MB
Space available on disk: 6718.7 MB
Details...
OK
Cancel

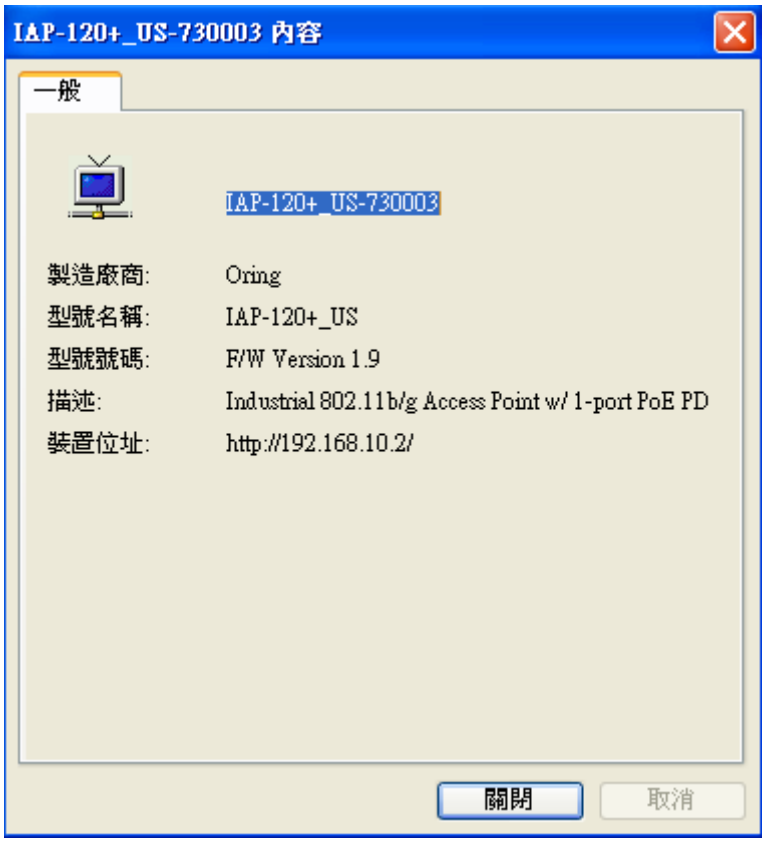
UPnP configuration page

Step 2: At the right-below corner of the computer, you will find a sign of the UPnP equipment.



Step 3: Click the sign of the UPnP equipment, then you will find the UPnP equipment in the network neighborhood.

Step 4: Right click the UPnP equipment to choose "Properties", it will show as the following pictures:




Step 5: Right click the UPnP equipment or double click the UPnP equipment to transfer; it will go to the web page.

## 5.3 Configuration by Web Browser

This section introduces the configuration by Web browser.

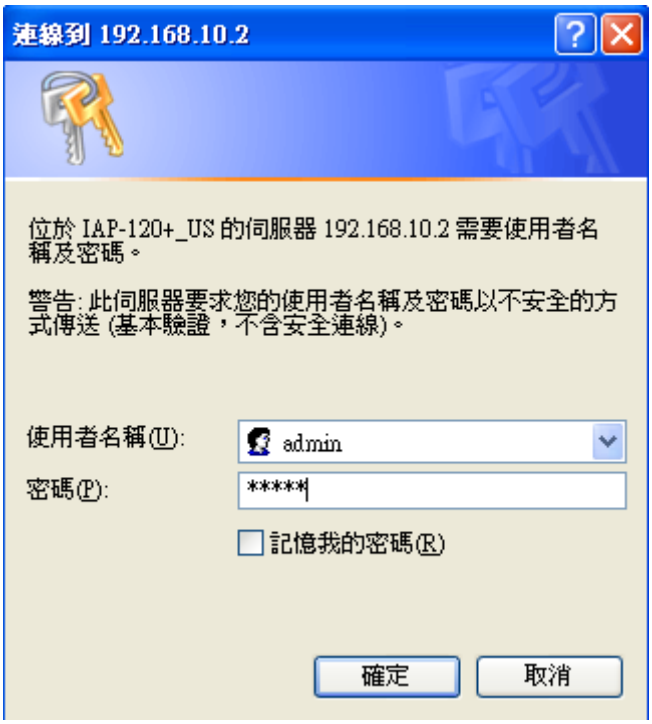
## 5.4 About Web-Based Management

An embedded HTML web site resides in flash memory in the system. It contains advanced management features and allows you to manage the AP from anywhere on the network through a standard web browser such as Microsoft Internet Explorer.

The Web-Based Management function supports Internet Explorer 5.0 or later. It is Based on Java Applets with an aim to reduce network bandwidth consumption, enhance access speed and present an easy viewing screen.

**Note:** By default, IE5.0 or later version does not allow Java Applets to open sockets. You need to explicitly modify the browser setting in order to enable Java Applets to use network ports.

Through the front section's information, you will see as follows, enter your user name **(admin)** and your password **(leave blank by default)**, then click **OK** to continue.

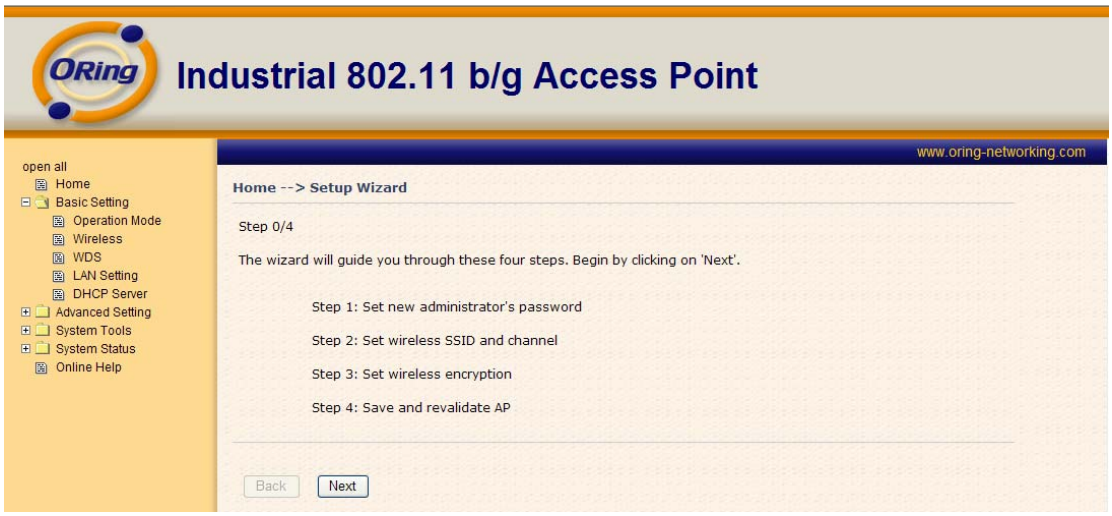



Login screen

For security reasons, we strongly suggest you change the password. Click on **System Tools > Administrator** and modify the password.

## 5.5 Main Interface

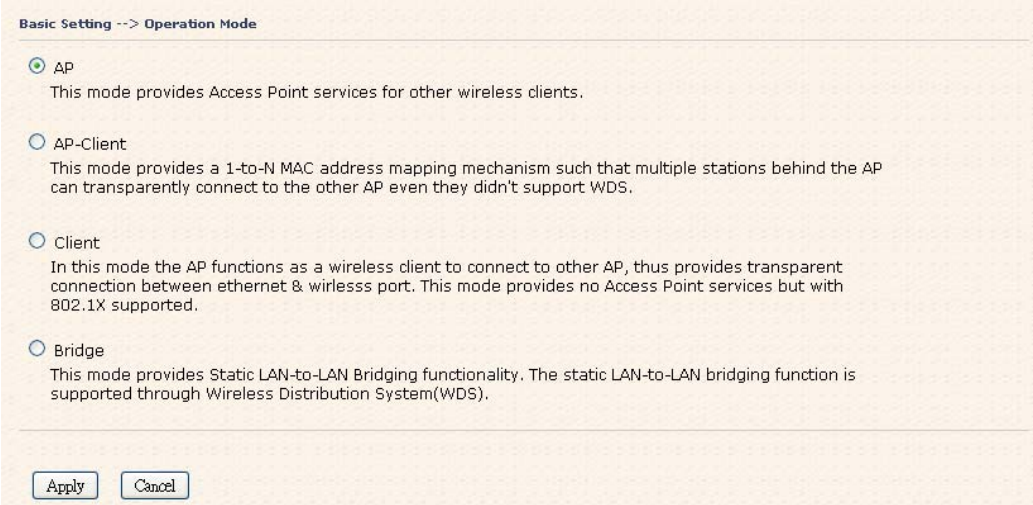
The **Home** screen will appear. Please click "Run Wizard" to go to the **Home > Setup Wizard** page to quick install the AP.




Main interface

### 5.5.1 Basic Setting

#### Setting Operation Mode


Basic Setting --> Operation Mode
AP
This mode provides Access Point services for other wireless clients.
AP-Client
This mode provides a 1-to-N MAC address mapping mechanism such that multiple stations behind the AP can transparently connect to the other AP even they didn't support WDS.
Client
In this mode the AP functions as a wireless client to connect to other AP, thus provides transparent connection between ethernet & wirlesss port. This mode provides no Access Point services but with 802.1X supported.
Bridge
This mode provides Static LAN-to-LAN Bridging functionality. The static LAN-to-LAN bridging function is supported through Wireless Distribution System(WDS).
Apply
Cancel

Operation mode interface

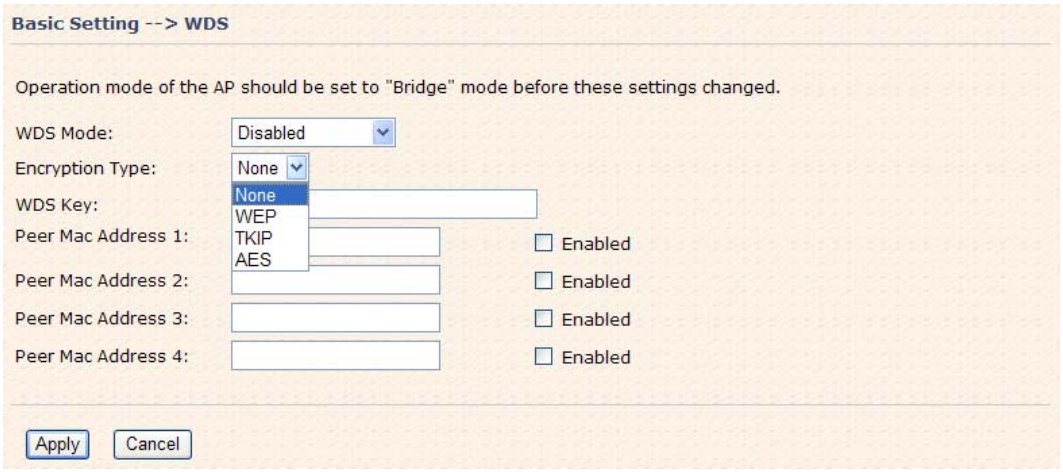
The following table describes the labels in this screen.

| Label | Description |
|---|---|
| **AP** | This mode provides Access Point services for other wireless clients. |
| **AP-Client** | The AP-Client function provides a 1-to-N MAC address mapping mechanism such that multiple stations behind the AP can transparently connect to the other AP even they didn't support |

| | |
|---|---|
| | WDS. |
| **Client** | In this mode the AP functions as a wireless client to connect to other AP, thus provides transparent connection between Ethernet & wireless port. This mode provides no Access Point services but with 802.1X supported. |
| **Bridge** | This mode provides Static LAN-to-LAN Bridging functionality. The static LAN-to-LAN bridging function is supported through Wireless Distribution System (WDS). |

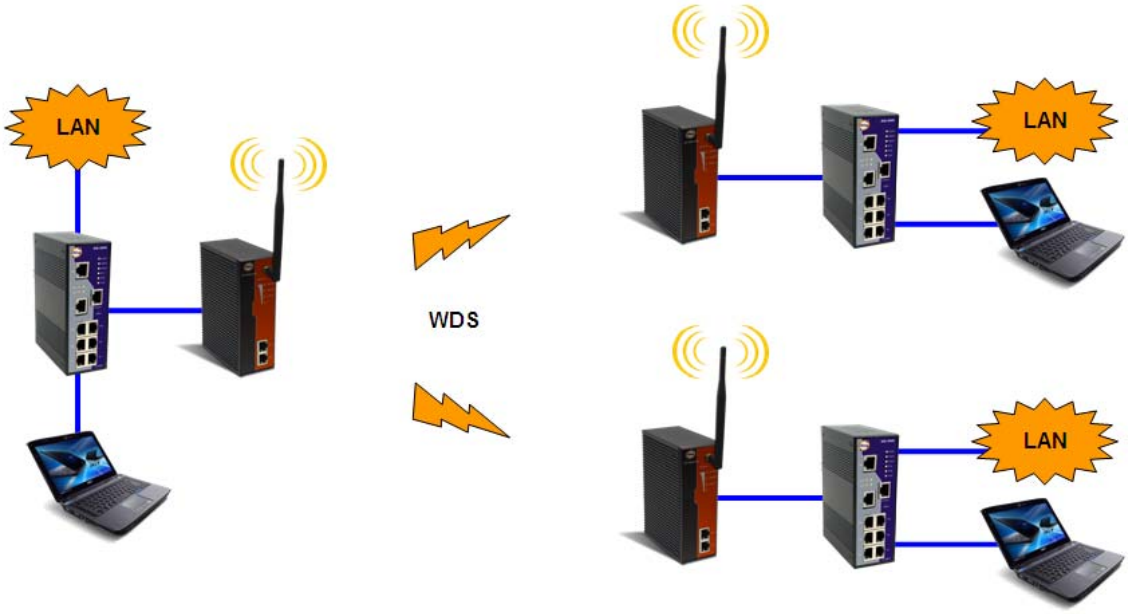
In each mode, the IAP-120 / 120+ forwards packet between its Ethernet interface and wireless interface for wired hosts on the Ethernet side, and wireless hosts on the wireless side.

### Setting WDS (Bridge Mode)

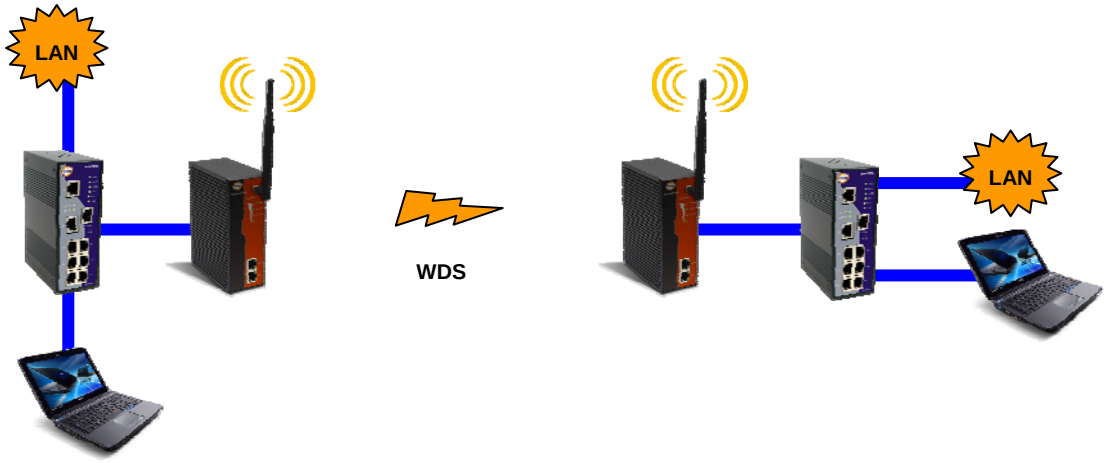



WDS setting interface

This type of wireless link is established between two IEEE 802.11 access points. Wireless packets transmitted along the WDS link comply with the IEEE 802.11 WDS (Wireless Distribution System) format at the link layer.




Point-to-Multipoint WDS Link




Point-to-Point WDS Link

The following table describes the labels in this screen.

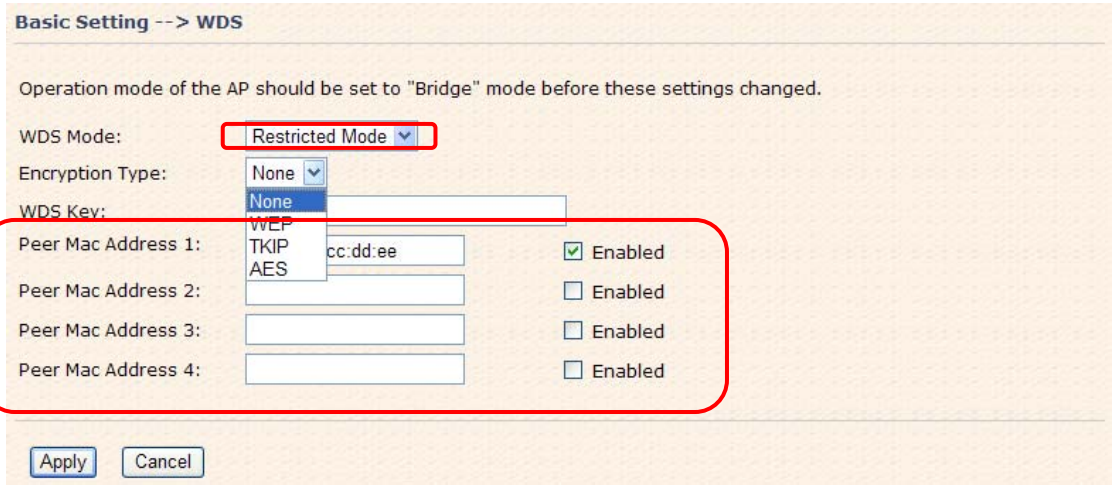
| Label | Description |
|---|---|
| **WDS Mode** | This mode provides Static LAN-to-LAN Bridging functionality. The static LAN-to-LAN bridging function is supported through Wireless Distribution System (WDS). |
| **Encryption Type** | Select the type of security for your wireless network |

| | |
|---|---|
| **WDS Key** | Fill in the encryption key when Encryption Type is TKIP or AES. |
| **Peer MAC Address** | Set the Mac address(es) of other access point(s). Simultaneity, choose on "Enable". |

First of all, if APs link with WDS mode, it should obey the following rules:

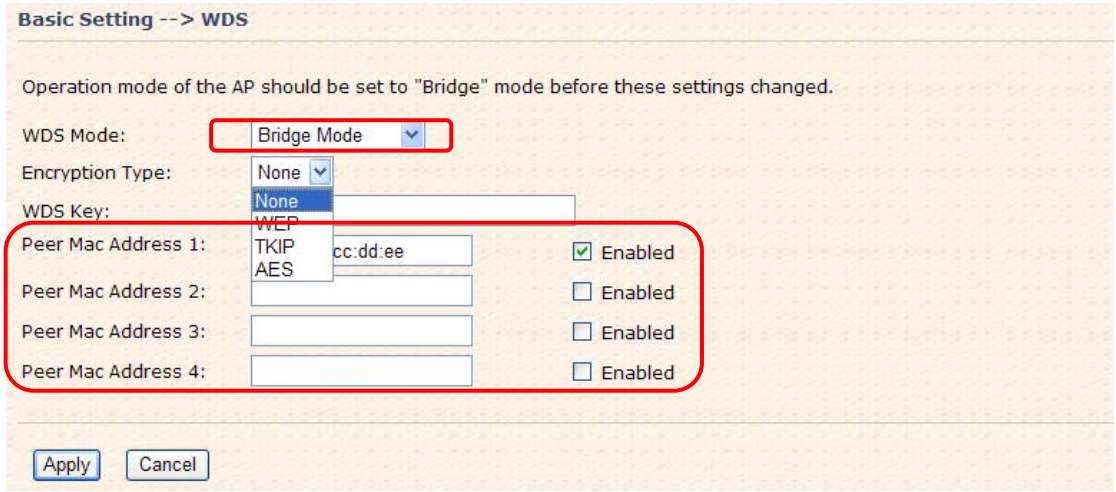
1. LAN IP Address should set different IP in the same network.
2. All AP's DHCP Server should set shutdown.
3. WDS should set Enable.
4. Each AP should have the same setting except 'Peer Mac Address' set to the other's Mac address
5. WEP Key and Channel should be the same, and each AP's SSID should be broadcast to see in the other's computer.
6. AP's distance should limit to a certainty area.

**WDS – Restricted Mode**



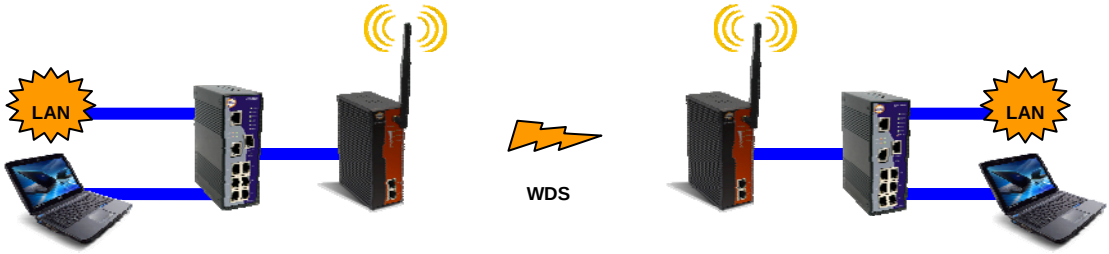

The peer WDS APs are according to the MAC address listed in "Peer Mac Address" fields.

**WDS –Bridge Mode**



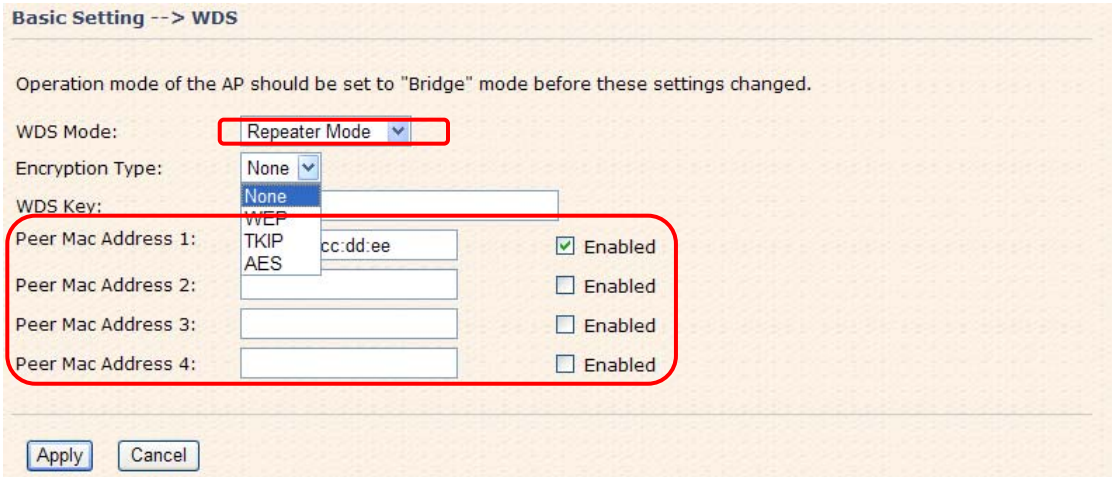

Same as Restrict mode in functionality and also one WDS link side can not set **Peer Mac Address 1-4.**

The working principle of **Bridge Mode** as follows:




In the figure, the AP behaves as a standard bridge that forwards traffic between WDS links (links that connect to other AP/wireless bridges) and an Ethernet port. As a standard bridge, the AP learns MAC addresses of up to 64 wireless or 128 total wired and wireless network devices, which are connected to their respective Ethernet ports to limit the amount of data to be forwarded. Only data destined for stations which are known to reside on the peer Ethernet link, multicast data or data with unknown destinations need to be forwarded to the peer AP via the WDS link.

**WDS –Repeater Mode**

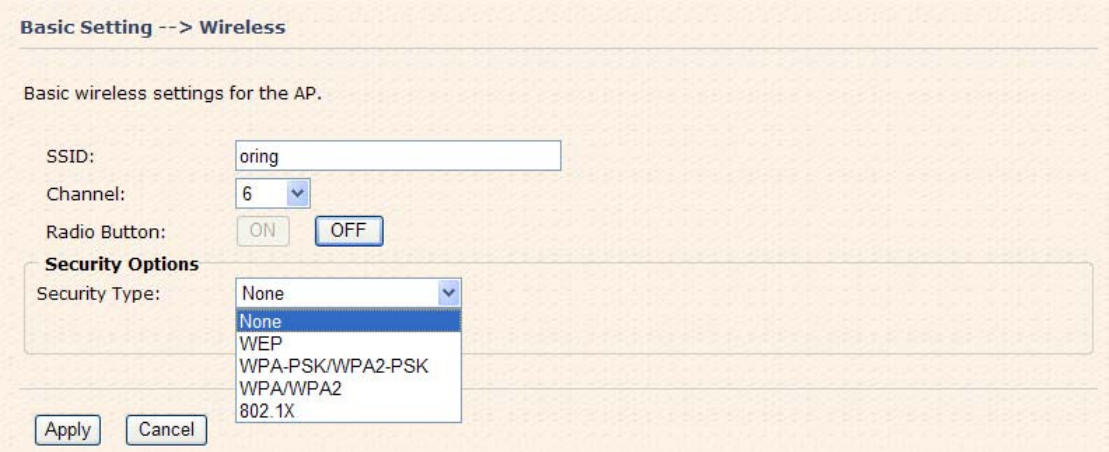



Same as Restrict mode in functionality and also one WDS link side can not set **Peer Mac Address 1-4.**

The working principle of **Repeater Mode** as follows:

In the figure, Repeater is used to extend the range of the wireless infrastructure by forwarding traffic between associated wireless stations and another repeater or AP connected to the wired LAN.

## Setting Wireless



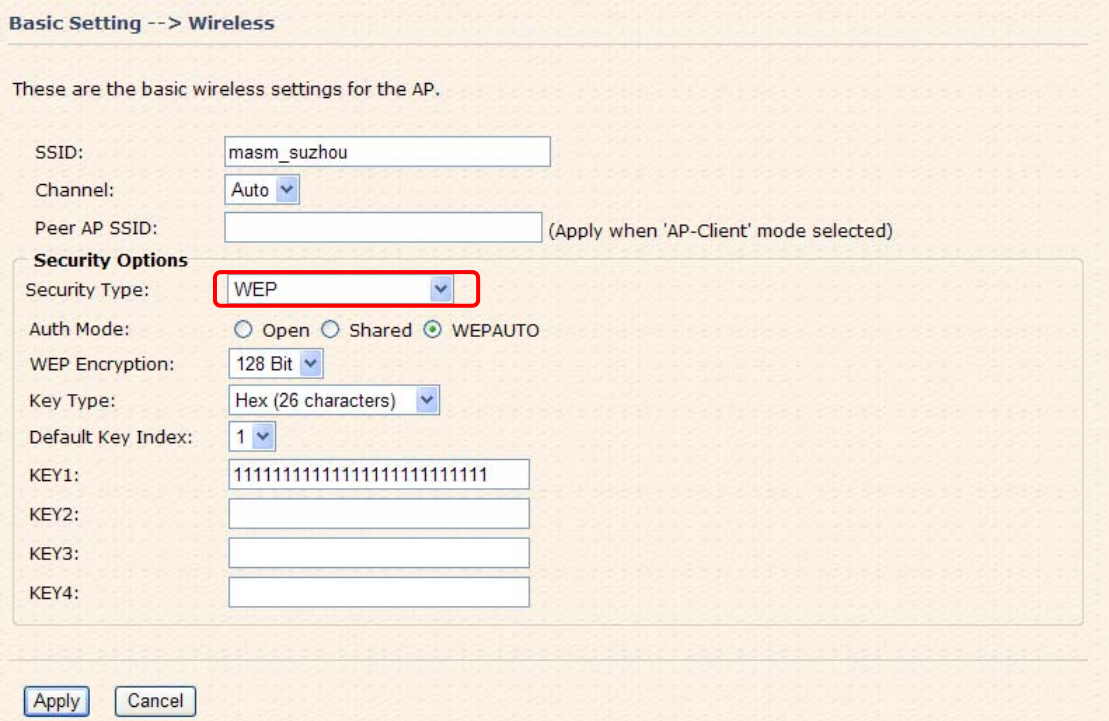

The following table describes the labels in this screen.

| Label | Description |
|---|---|
| **SSID** | Service Set Identifier Default is the default setting. The SSID is a unique name that identifies a network. All devices on the network must share the same SSID name in order to communicate on the network. If you change the SSID from the default setting, input your new SSID name in this field. |
| **Channel** | Channel 6 is the default channel, input a new number if you want to change the default setting. All devices on the network must be set to the same channel to communicate on the network. |
| **Peer AP SSID** | Only Operation Mode selects AP-Client Mode, you should enter the peer AP SSID. |
| **Security options** | Select the type of security for your wireless network at **Security Type:**<br><br>**None:** Select for no security.<br><br>**WEP:** Select for security WEP.<br><br>**WPA-PSK/WPA2-PSK:** Select for security WPA-PSK or WPA2-PSK without a RADIUS server.<br><br>**WPA/WPA2:** Select for WPA or WPA2 (Wi-Fi Protected Access) authentication in conjunction with a RADIUS server.<br><br>**802.1x:** Authentication through RADIUS server |

**Security Type – None**

No security protection on your wireless LAN access.

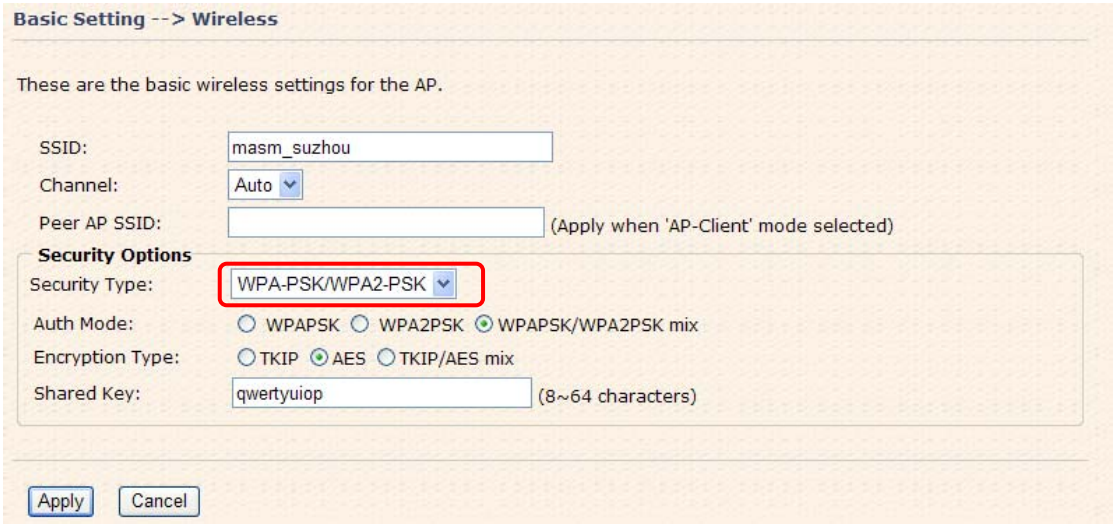
**Security Type – WEP**




1. Security Type: Select **WEP**
2. WEP Encryption: Select 64 Bit or 128 Bit WEP encryption.
3. Key Type: Select ASCII or Hex key type.
4. Default Key Index: Select one of the keys to be the active key.
5. Key 1-4: Input up to four encryption keys.

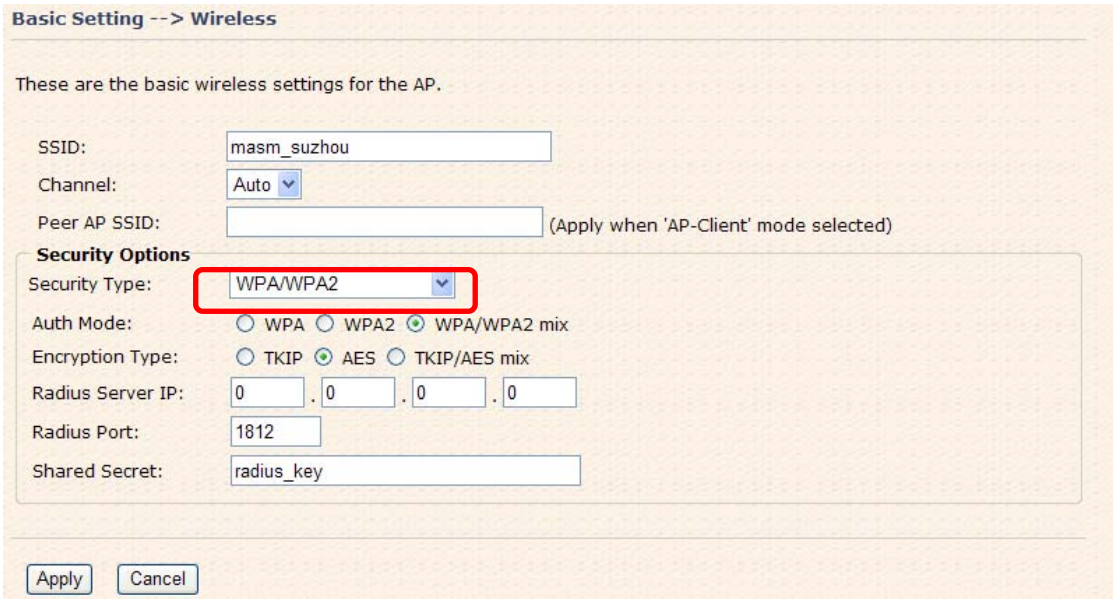
**ASCII** (American Standard Code for Information Interchange) is a code for representing English letters as numbers from 0-127. **Hex** digits consist of the numbers 0-9 and the letters A-F.

**Security Type – WPA-PSK/WPA2-PSK**



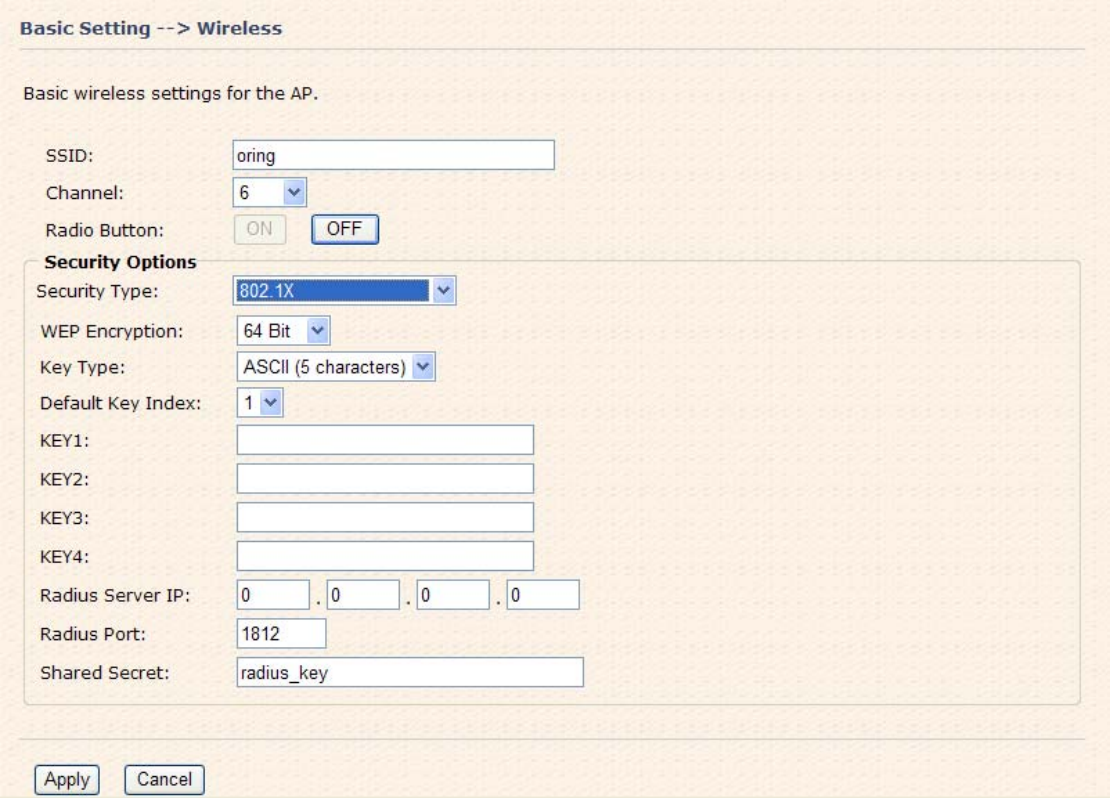

1. Security Type: Select **WPA-PSK/WPA2-PSK**.
2. Encryption Type: Select **TKIP** or **AES** encryption.
3. Share Key: Enter your password. The password can be between 8 and 64 characters.

**Security Type – WPA /WPA2**




1. Security Type: Select **WPA/WPA2**
2. Radius Server IP: Enter the IP address of the RADIUS Server.
3. Port: Enter the RADIUS port (1812 is default).
4. Shared Secret: Enter the RADIUS password or key.

**Security Type – 802.1x**

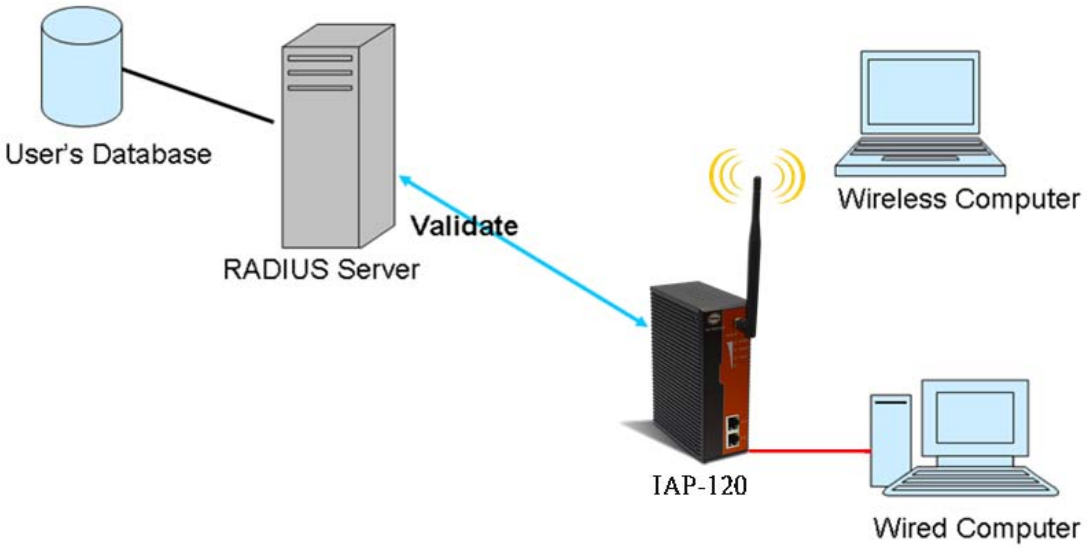



1. Security Type: Select **802.1x**
2. WEP Encryption: Select 64 Bit or 128 Bit WEP encryption.
3. Key Type: Select ASCII or Hex key type.
4. Default Key Index: Select one of the keys to be the active key.
5. Key 1-4: Input up to four encryption keys.
6. Radius Server IP: Enter the IP address of the RADIUS Server.
7. Port: Enter the RADIUS port (1812 is default).
8. Shared Secret: Enter the RADIUS password or key.

**RADIUS** (Remote Authentication Dial-in User Service) is the industrial standard agreement, and it is used to provide an identify verification. The Radius customer (is usually a dial-in server, VPN server or wireless point) send your proof and the conjunction parameter to the Radius server by Radius news. The Radius server validates the request of the Radius customer, and return Radius news to back.

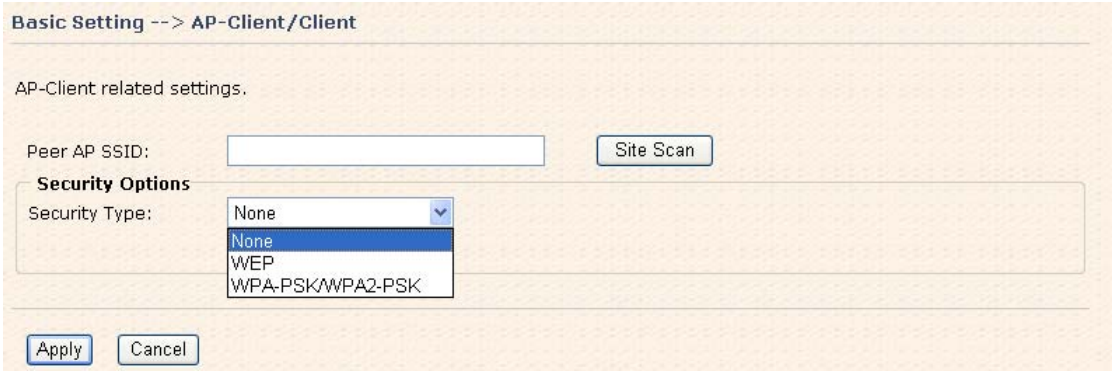
Radius server validates your proof, also carry on the authorization. So the Radius server received by ISA server responded (point out the customer carries proof to be not granted) and it means that the Radius server did not authorize you to carry. Even if the proof has already passed an identify verification, the ISA server may also refuse you to carry a claim according to the authorization strategy of the Radius server.

The principle of the Radius server shows in the following pictures:

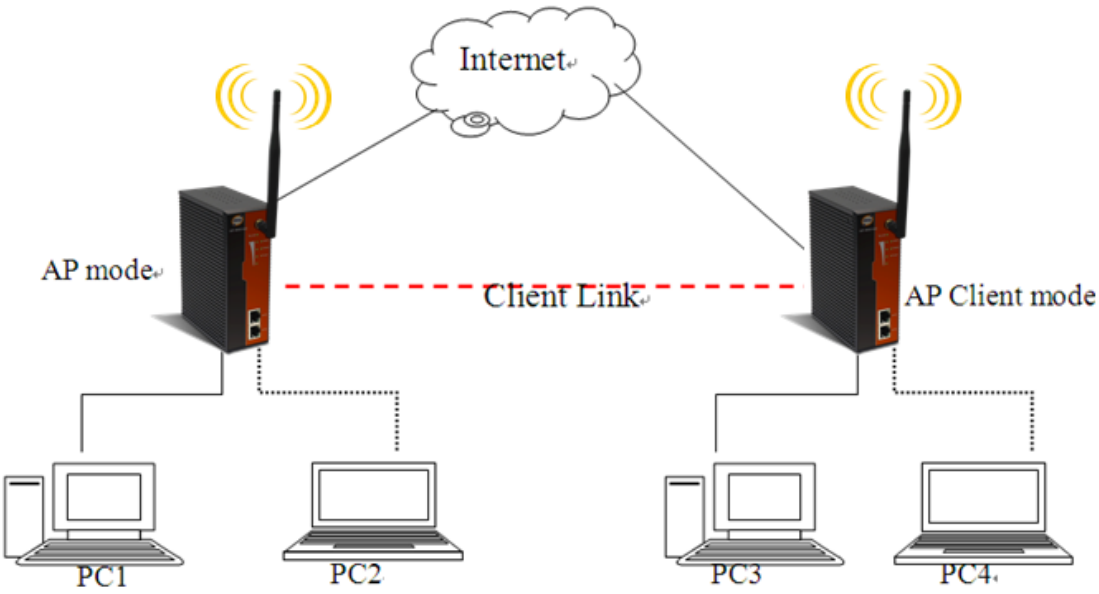


## AP-Client/Client

The **Basic setting—>AP-Client/Client** page is mainly set the client which through the SSID and Security to connect to other AP. In this mode, the Security Type should be the same with the AP Server.




The principle of the AP-Client/Client mode shows in the following pictures:




**Result:**

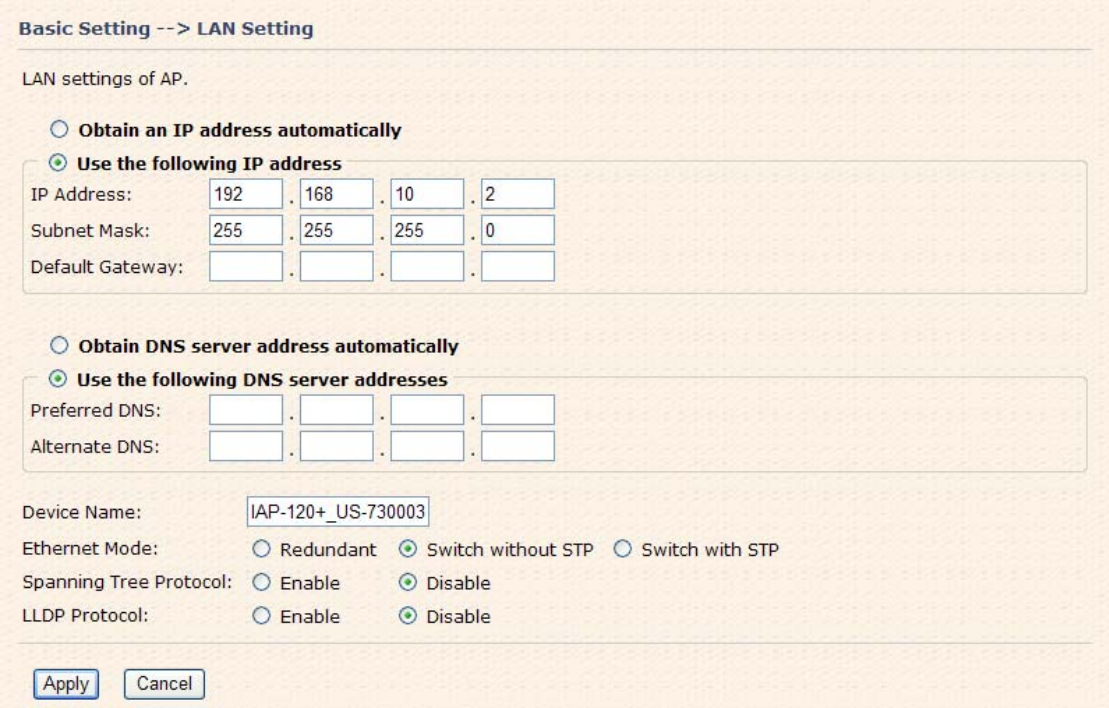
1. PC1, PC2 can visit PC3, PC4 and AP Client
2. PC3, PC4 can visit PC1, PC2 and AP
3. AP Client can visit AP

The following table describes the labels in this screen.

| Label | Description |
|---|---|
| **Peer AP SSID** | Enter the other AP which used for AP mode. |
| **Site Scan** | You can scan the APs which used for AP mode in the certainty area |
| **Security Type** | Set the same security with the AP which you want to connect. |

## LAN Setting

The **Basic Setting > LAN Setting** page is mainly set IP address for LAN interface. To access the AP normally, a valid IP address of your LAN should be specified to the LAN interface. The default IP setting is DHCP server (Obtain an IP address automatically).

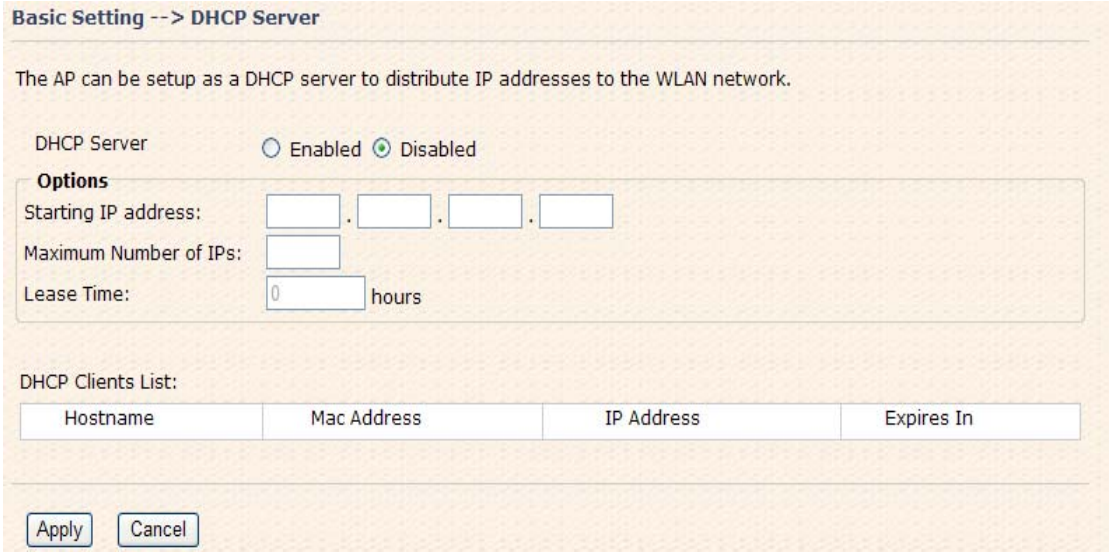

Basic Setting --> LAN Setting
LAN settings of AP.
Obtain an IP address automatically
Use the following IP address
IP Address: 192 . 168 . 10 . 2
Subnet Mask: 255 . 255 . 255 . 0
Default Gateway:
Obtain DNS server address automatically
Use the following DNS server addresses
Preferred DNS:
Alternate DNS:
Device Name: IAP-120+_US-730003
Ethernet Mode: Redundant Switch without STP Switch with STP
Spanning Tree Protocol: Enable Disable
LLDP Protocol: Enable Disable
Apply
Cancel

The following table describes the labels in this screen.

| Label | Description |
|---|---|
| **Obtain an IP address automatically** | Select this option if you would like to have an IP address automatically assigned to the IAP-120 / 120+ by DHCP server in your network |
| **Use the following IP address** | Select this option if you are manually assigning an IP address.<br><br>**IP Address:** There is a default IP address in the AP, and you can input a new IP address.<br><br>**Subnet Mask:** 255.255.255.0 is the default Subnet Mask. All |

| | |
|---|---|
| | devices on the network must have the same subnet mask to communicate on the network.<br><br>**Default Gateway:** Enter the IP address of the router in your network. |
| **Obtain DNS server address automatically** | This option is selected by DHCP server. |
| **Use the following DNS server addresses** | This option is selected by manually set<br><br>**Preferred DNS:** There is a default DNS server, and you can input another new DNS server.<br><br>**Alternate DNS:** There is a default DNS server, and you can input another new DNS server. |

## Setting DHCP Server

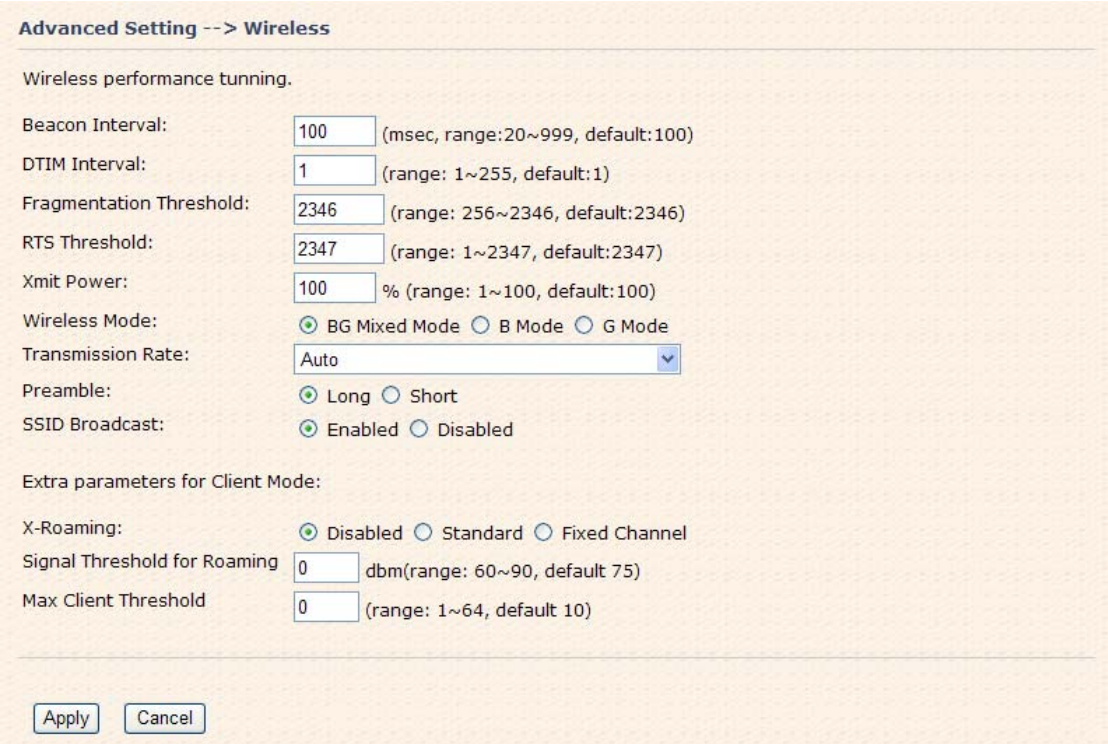



The following table describes the labels in this screen.

| Label | Description |
|---|---|
| **DHCP Server** | Enable or Disable the DHCP Server function. Enable – the AP will be the DHCP server on your local network |
| **Start IP Address** | The dynamic IP assign range. Low IP address is the beginning of the dynamic IP assigns range. For example: dynamic IP assign range is from 192.168.1.100 to 192.168.1.200. 192.168.1.100 will be the Start IP address. |
| **Maximum Number of** | The dynamic IP assign range. High IP address is the end of the |

| | |
|---|---|
| **IPs** | dynamic IP assigns range. For example: dynamic IP assign range is from 192.168.1.100 to 192.168.1.200. **100** will be enter into textbox. |
| **Lease Time (Hour)** | It is the time period that system will reset the dynamic IP assignment to ensure the dynamic IP will not been occupied for a long time or the server doesn't know that the dynamic IP is idle. |
| **DHCP Clients List** | List the devices on your network that are receiving dynamic IP addresses from the IAP-120 / 120+. |

### 5.5.2 Advanced Setting
### Wireless


Advanced Setting --> Wireless
Wireless performance tunning.
Beacon Interval: 100 (msec, range:20~999, default:100)
DTIM Interval: 1 (range: 1~255, default:1)
Fragmentation Threshold: 2346 (range: 256~2346, default:2346)
RTS Threshold: 2347 (range: 1~2347, default:2347)
Xmit Power: 100 % (range: 1~100, default:100)
Wireless Mode: BG Mixed Mode B Mode G Mode
Transmission Rate: Auto
Preamble: Long Short
SSID Broadcast: Enabled Disabled
Extra parameters for Client Mode:
X-Roaming: Disabled Standard Fixed Channel
Signal Threshold for Roaming 0 dbm(range: 60~90, default 75)
Max Client Threshold 0 (range: 1~64, default 10)
Apply
Cancel

The following table describes the labels in this screen.

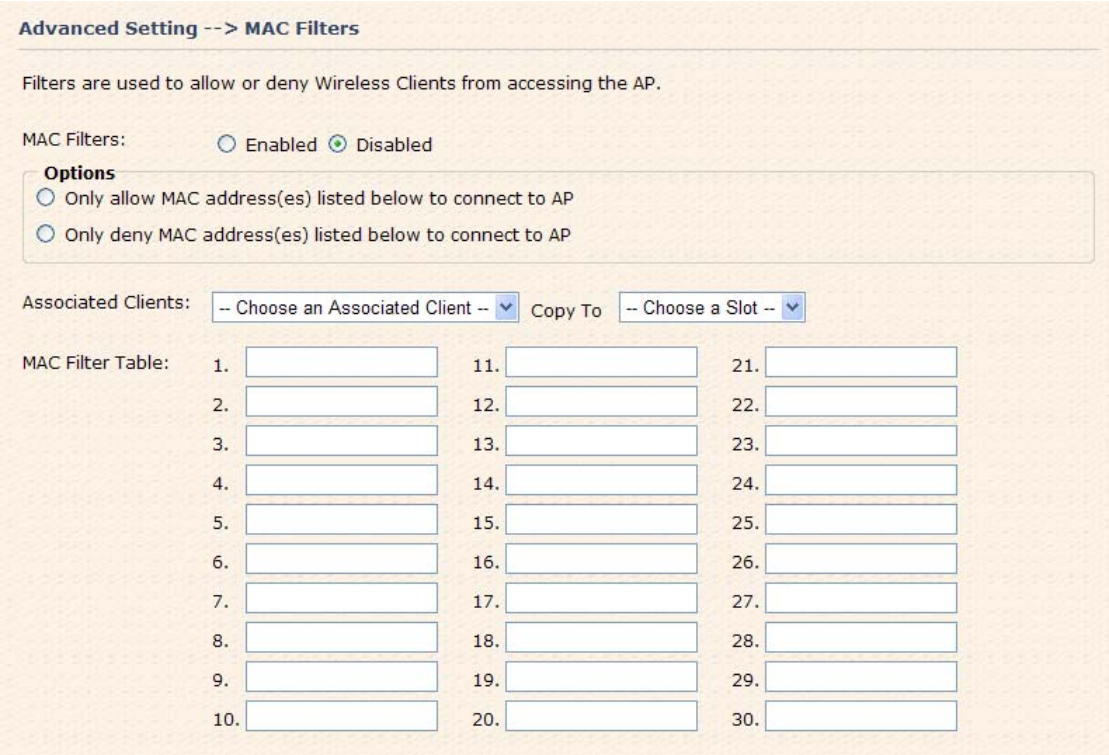
| Label | Description |
|---|---|
| **Beacon Interval** | The default value is 100. The Beacon Interval value indicates the frequency interval of the beacon. A beacon is a packet broadcast by the AP to synchronize the wireless network. 50 is recommended in poor reception. |
| **DTIM Interval** | The default value is 1. This value, between 1 and 255 milliseconds, indicates the interval of the Delivery Traffic Indication Message (DTIM). A DTIM field is a countdown field informing clients of the next window for listening to broadcast and |

| | |
|---|---|
| | multicast messages. When the AP has buffered broadcast or multicast messages for associated clients, it sends the next DTIM with a DTIM Interval value. Its clients hear the beacons and awaken to receive the broadcast and multicast messages. |
| **Fragmentation Threshold** | This value should remain at its default setting of 2346. The range is 256-2346 bytes. It specifies the maximum size for a packet before data is fragmented into multiple packets. If you experience a high packet error rate, you may slightly increase the Fragmentation Threshold. Setting the Fragmentation Threshold too low may result in poor network performance. Only minor modifications of this value are recommended. |
| **RTS Threshold** | This value should remain at its default setting of 2347. The range is 0-2347 bytes. Should you encounter inconsistent data flow, only minor modifications are recommended. If a network packet is smaller than the preset RTS threshold size, the RTS/CTS mechanism will not be enabled. The AP sends Request to Send (RTS) frames to a particular receiving station and negotiates the sending of a data frame. After receiving an RTS, the wireless station responds with a Clear to Send (CTS) frame to acknowledge the right to begin transmission. |
| **Xmit Power** | This value ranges from 1 - 100 percent, default value is 100 percent. A safe increase of up to 60 percent would be suitable for most users. Higher power settings are not recommended for users due to excess heat generated by the radio chipset, which can affect the life of the AP. |
| **Wireless Network Mode** | If you have Wireless-G and 802.11b devices in your network, then keep the default setting, BG Mixed mode. If you have only Wireless-G devices, select G Mode. If you would like to limit your network to only 802.11b devices, then select B Mode. |
| **Transmission Rate** | The default setting is **Auto**. The range is from 1 to 54Mbps. The rate of data transmission should be set depending on the speed of your wireless network. You can select from a range of transmission speeds, or keep the default setting, Auto, to have the AP automatically use the fastest possible data rate and enable the Auto-Fallback feature. Auto-Fallback will negotiate the best possible connection speed between the AP and a wireless client. |
| **Preamble** | Values are Long and Short, default value is Long. If your |

| | |
|---|---|
| | wireless device supports the short preamble and you are having trouble getting it to communicate with other 802.11b devices, make sure that it is set to use the long preamble |
| **SSID Broadcast** | When wireless clients survey the local area for wireless networks to associate with, they will detect the SSID broadcast by the AP. To broadcast the AP SSID, keep the default setting, Enable. If you do not want to broadcast the AP SSID, then select Disable. |
| **X-Roaming** | **Disable:** Disable X-Roaming protocol.<br>**Standard:** Roaming group does not require the same wireless channel, but slower to switch than the "fixed channel" mode<br>**Fixed channel:** Roaming group must be required the same wireless channel, but faster to switch than the "Standard" mode |
| **Signal Threshold for Roaming** | Roaming signal threshold setting. When signal below this value AP will roaming to another client target which the same SSID, security option and signal strongest within the environment.(This value just effect on client-mode equipment) |
| **Max Client Threshold** | Max number of client equipment setting. When client number over this value AP will reject roaming equipment connection.(This value just effect on AP-mode equipment) |

## MAC Filter

Use **Advanced Setting > MAC Filters** to allow or deny wireless clients, by their MAC addresses, from accessing the IAP-120 / 120+. You can manually add a MAC address or select the MAC address from **Connected Clients** that are currently connected to the AP.

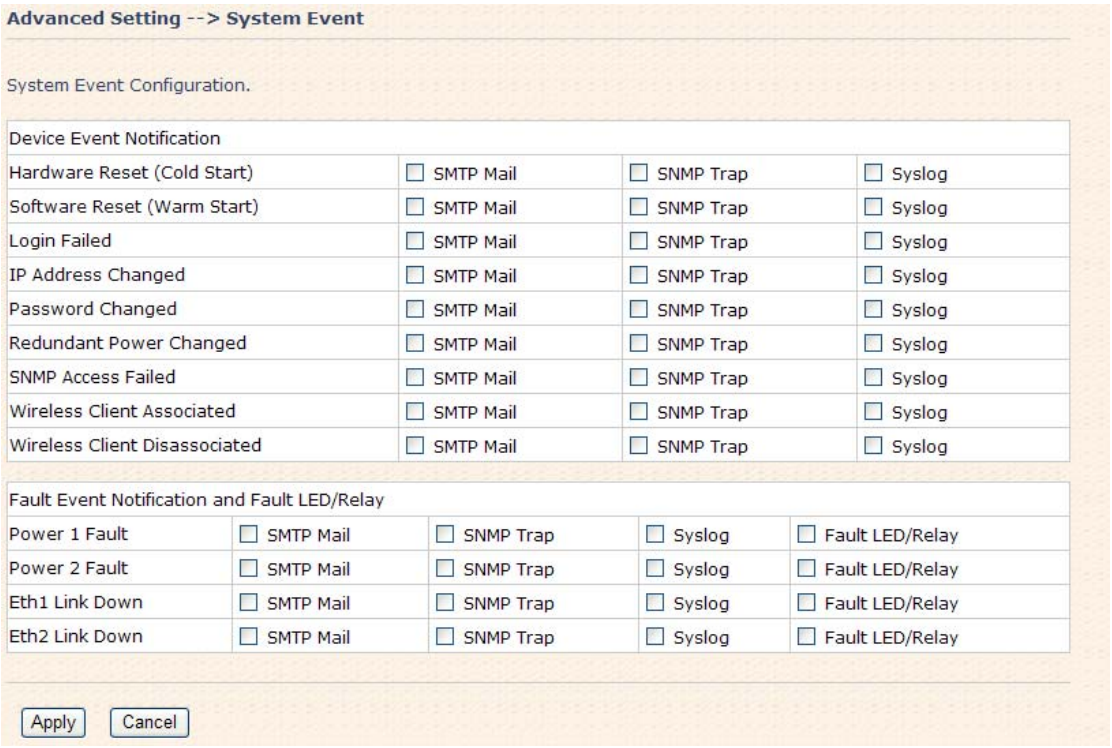

Advanced Setting --> MAC Filters
Filters are used to allow or deny Wireless Clients from accessing the AP.
MAC Filters: Enabled Disabled
Options
Only allow MAC address(es) listed below to connect to AP
Only deny MAC address(es) listed below to connect to AP
Associated Clients: -- Choose an Associated Client -- Copy To -- Choose a Slot --
MAC Filter Table:
1. 2. 3. 4. 5. 6. 7. 8. 9. 10.
11. 12. 13. 14. 15. 16. 17. 18. 19. 20.
21. 22. 23. 24. 25. 26. 27. 28. 29. 30.

The following table describes the labels in this screen.

| Label | Description |
|---|---|
| **MAC Filter** | Enable or disable the function of MAC filter. MAC address allowed or denied option is selected by you. |
| **MAC Filter List** | This list will display the MAC addresses that are in the selected filter. |
| **Connected Clients** | This list will display the wireless MAC addresses that linked with AP. |
| **MAC Address** | MAC addresses need to be added to or clear from MAC filter list. |
| **Apply** | Click Apply to set the configurations. |

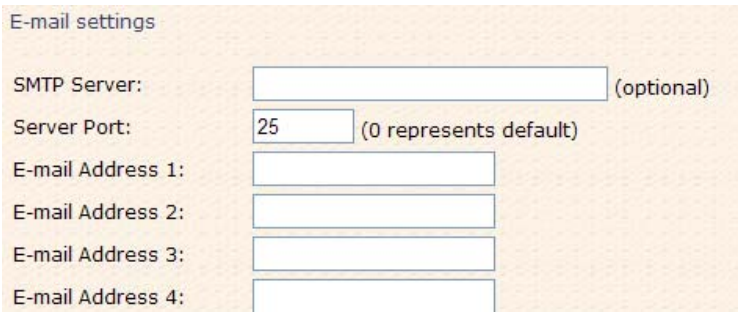
## System Event

When the AP event triggered, the notification procedure will be performed according to the type of the event. Which notification would be performed depends on the selection of corresponding option in the **Advanced Setting > System Event** page.


Advanced Setting --> System Event
System Event Configuration.
Device Event Notification
Hardware Reset (Cold Start) SMTP Mail SNMP Trap Syslog
Software Reset (Warm Start) SMTP Mail SNMP Trap Syslog
Login Failed SMTP Mail SNMP Trap Syslog
IP Address Changed SMTP Mail SNMP Trap Syslog
Password Changed SMTP Mail SNMP Trap Syslog
Redundant Power Changed SMTP Mail SNMP Trap Syslog
SNMP Access Failed SMTP Mail SNMP Trap Syslog
Wireless Client Associated SMTP Mail SNMP Trap Syslog
Wireless Client Disassociated SMTP Mail SNMP Trap Syslog
Fault Event Notification and Fault LED/Relay
Power 1 Fault SMTP Mail SNMP Trap Syslog Fault LED/Relay
Power 2 Fault SMTP Mail SNMP Trap Syslog Fault LED/Relay
Eth1 Link Down SMTP Mail SNMP Trap Syslog Fault LED/Relay
Eth2 Link Down SMTP Mail SNMP Trap Syslog Fault LED/Relay
Apply
Cancel

System events record the activities of the AP system. When the setting changes or action performs, the event will be sent to administrator by email. A trap will also be sent to SNMP server. The Syslog will record the event locally and may send the log remotely to a Syslog server. If serious event occurred, such as the power failure or link down, the fault LED will be switched on as warning.

## Email Settings

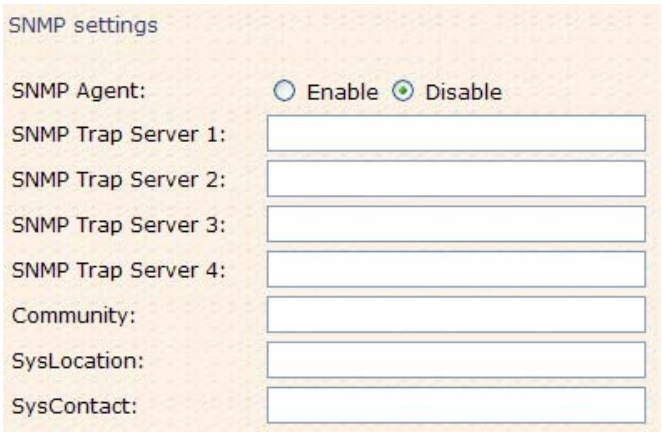



The following table describes the labels in this screen.

| Label | Description |
|---|---|
| **SMTP Server** | Simple Message Transfer Protocol, enter the backup host to use if primary host is unavailable while sending mail by SMTP server. |

| | |
|---|---|
| **Server Port** | Specify the port where MTA can be contacted via SMTP server. |
| **E-mail Address 1-4** | Inputs specify the destination mail address. |

## SNMP Settings




The following table describes the labels in this screen.

| Label | Description |
|---|---|
| **SNMP Agent** | SNMP (Simple Network Management Protocol) Agent is a service program that runs on the access point. The agent provides management information to the NMS by keeping track of various operational aspects of the AP system. Turn on to open this service and off to shutdown it. |
| **SNMP Trap Server 1-4** | Specify the IP of trap server, which is the address to which it will send traps AP generates. |
| **Community** | Community is essentially password to establish trust between managers and agents. Normally "public" is used for read-write community. |
| **SysLocation** | Specify sysLocation string. |
| **SysContact** | Specify sysContact string. |

## Syslog Server Settings

The following table describes the labels in this screen.

| Label | Description |
|---|---|
| **Syslog Server IP** | Not only the syslog keeps the logs locally, it can also log to remote server. Specify the IP of remote server. Leave it blank to disable logging remotely. |
| **Syslog Server Port** | Specify the port of remote logging. Default port is 514. |

## 5.5.3 System Tools

### Administrator

In this page, you can change the username and password. The new password must be typed twice to confirm (the default Name and Password is "**admin**" and "").

The following table describes the labels in this screen.

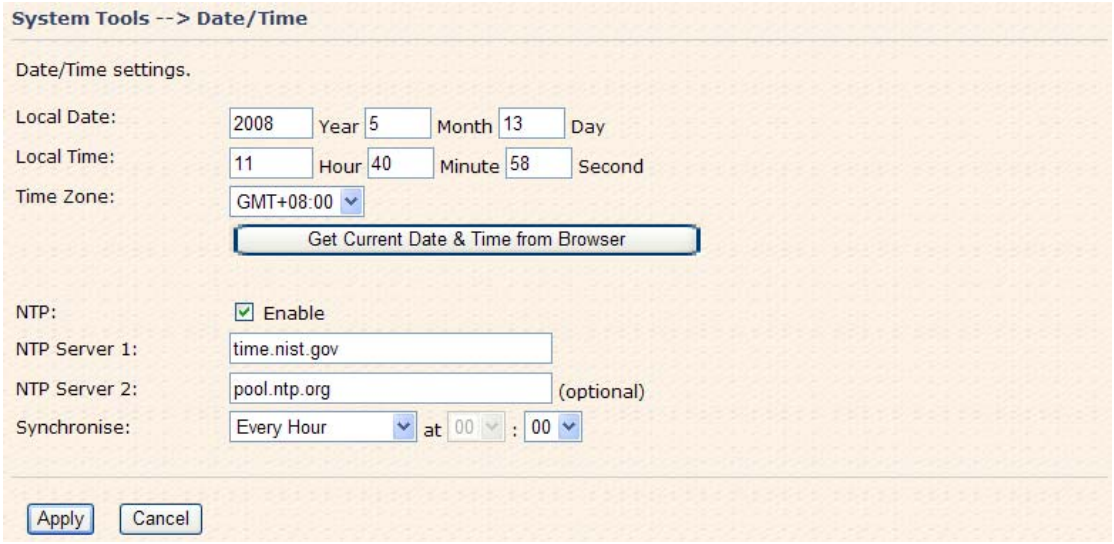
| Label | Description |
|---|---|
| **Old Name** | This field displays the old login name. It's read only. The default value of login name is "admin". |
| **Old Password** | Before making a new setting, you should provide the old password for a verify check. Acceptable inputs of this field contains '0-9', 'a-z', 'A-Z' and must be between 0 to 15 characters in length. The factory default value of login password is null. |
| **New Name** | Enter a new login name. Acceptable inputs of this field contains |

| | |
|---|---|
| | '0-9', 'a-z', 'A-Z' and must be between 1 to 15 characters in length. This field can not accept null input. |
| **New Password** | Enter a new login password. Acceptable inputs of this field contains '0-9', 'a-z', 'A-Z' and must be between 0 to 15 characters in length. |
| **Confirm New Password** | Retype the password to confirm it. Acceptable inputs of this field contains '0-9', 'a-z', 'A-Z' and must be between 0 to 15 characters in length. |
| **Web Protocol** | Choose on the protocol for web. The default value is **HTTP**, if you want the web pages' security is better, choose the **HTTPS** protocol. |
| **Port** | Corresponding to the Web protocol, there is a default port (HTTP: 80, HTTPS: 443). And you can enter another number which should be in range of 1-65535. |
| **Web Access Control** | Choose the checkbox of the Wired and Wireless; you can visit the web page through the mode you choose. |
| **UPnP** | Pitch on "Enable", and the UPnP will display in the right-behind corner. |

**HTTPS** (HTTP over SSL) is a Web protocol developed by Netscape and built into its browser that encrypts and decrypts user page requests as well as the pages that are returned by the Web server.

## Date & Time

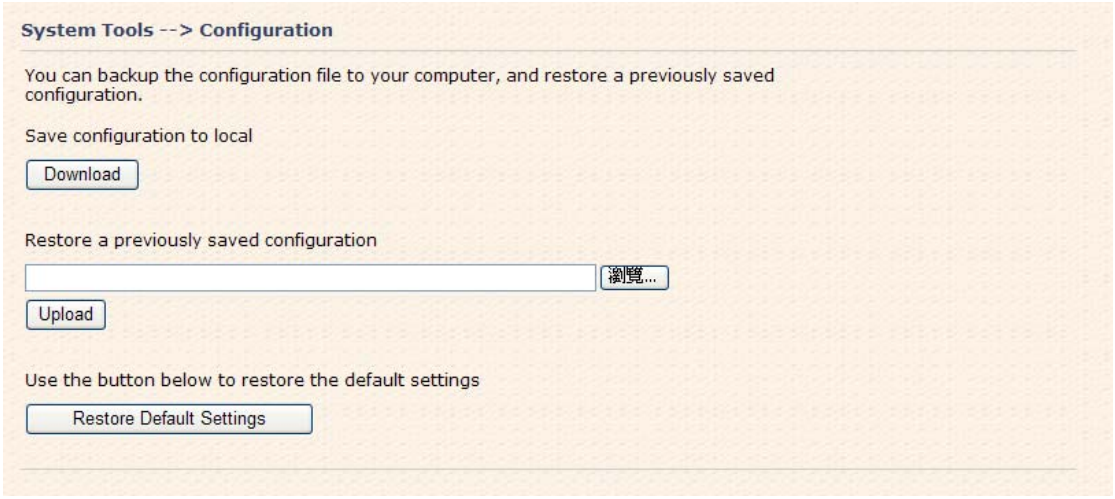
In this page, set the date & time of the device. The correct date & time will be helpful for logging of system events. A NTP (Network Time Protocol) client can be used to synchronize date & time with NTP server.




The following table describes the labels in this screen.

| Label | Description |
|---|---|
| **Local Date** | Set local date manually. |
| **Local Time** | Set local time manually. |
| **Time Zone** | Select the time zone manually |
| **Get Current Date & Time from Browser** | Click this button, you can set the time from browser. |
| **NTP** | Enable or disable NTP function to get the time from the NTP server. |
| **NTP Server 1** | The initial choice about NTP Server. |
| **NTP Server 2** | The second choice about NTP Server. |
| **Synchronize** | Set the time, and the AP's time synchronize with the NTP Server at the time |

## Configuration


System Tools --> Configuration
You can backup the configuration file to your computer, and restore a previously saved configuration.
Save configuration to local
Download
Restore a previously saved configuration
瀏覽...
Upload
Use the button below to restore the default settings
Restore Default Settings

The following table describes the labels in this screen.

| Label | Description |
|---|---|
| **Download configuration** | The current system settings can be saved as a file onto the local hard drive. |
| **Upload configuration** | The saved file or any other saved setting file can be uploaded back on the AP. To reload a system settings file, click on **Browse** to browse the local hard drive and locate the system file to be used. Click **Upload** when you have selected the file to be loaded back onto the AP. |
| **Restore Default Settings** | You may also reset the IAP-120 / 120+ back to factory settings by clicking on **Restore Default Settings**. Make sure to save the unit's settings before clicking on this button. You will lose your current settings when you click this button. |

## Firmware Upgrade

New firmware may provide better performance, bug fixes or more functions. To upgrade, you need a firmware file correspond to this AP model. It will take several

minutes to upload and upgrade the firmware. After the upgrade is done successfully, the access point will reboot and get revalidated.

**Notice:** DO NOT POWER OFF THE AP OR PRESS THE RESET BUTTON WHILE THE FIRMWARE IS BEING UPGRADED.

## Miscellaneous

If you want restart the access point through the **Warm Reset**, click **Restart Now** to restart the AP.

## 5.5.4 System Status

### System Info

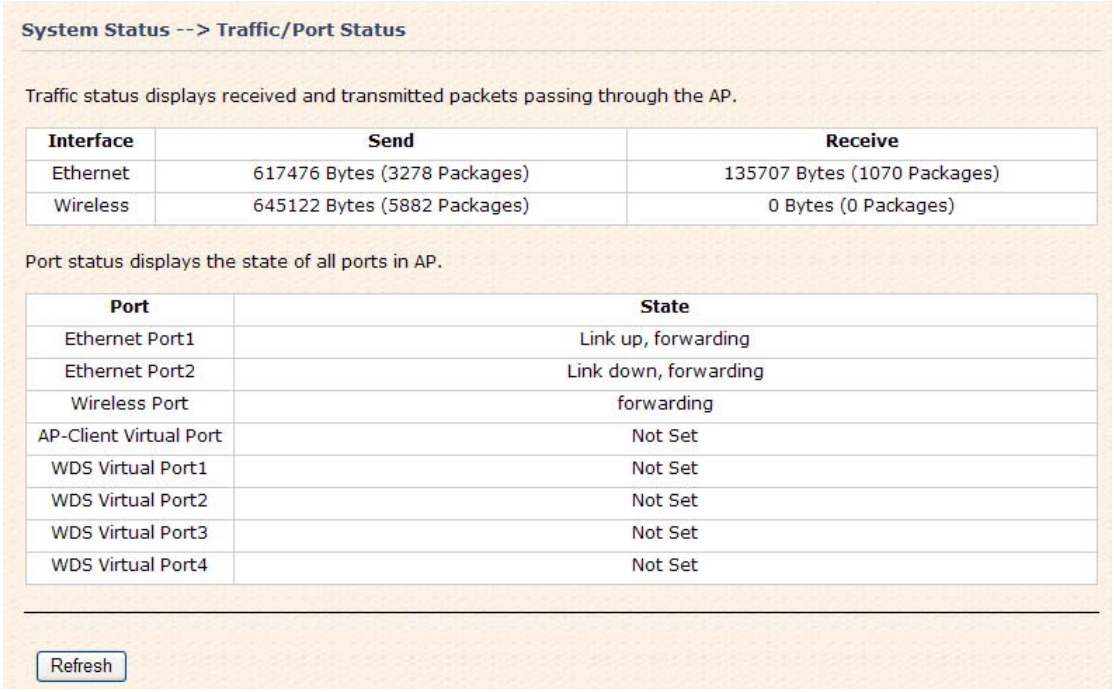
This page displays the current information for the IAP-120 / 120+. It will display model name, as well as firmware version, Ethernet, Wireless info and device time.

### System Log

The system log tracks the important events and setting changes of the AP. If the AP is rebooted, the logs are automatically cleared.

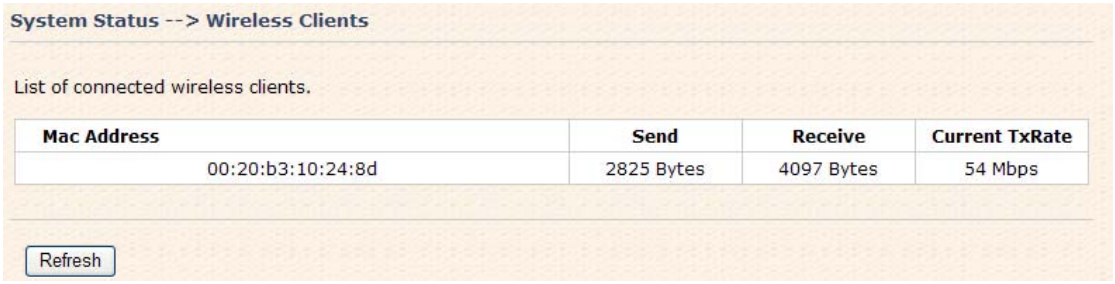
Click the button '**Refresh**' to refresh the page; Click the button '**Clear**' to clear log entries.

## Traffic Statistics


System Status --> Traffic/Port Status
Traffic status displays received and transmitted packets passing through the AP.
Interface | Send | Receive
Ethernet | 617476 Bytes (3278 Packages) | 135707 Bytes (1070 Packages)
Wireless | 645122 Bytes (5882 Packages) | 0 Bytes (0 Packages)
Port status displays the state of all ports in AP.
Port | State
Ethernet Port1 | Link up, forwarding
Ethernet Port2 | Link down, forwarding
Wireless Port | forwarding
AP-Client Virtual Port | Not Set
WDS Virtual Port1 | Not Set
WDS Virtual Port2 | Not Set
WDS Virtual Port3 | Not Set
WDS Virtual Port4 | Not Set
Refresh

This page displays the network traffic statistics for both received and transmitted packets through the Ethernet port and wireless connections associated with the AP. Simultaneity, the traffic counter will reset by the device rebooting.

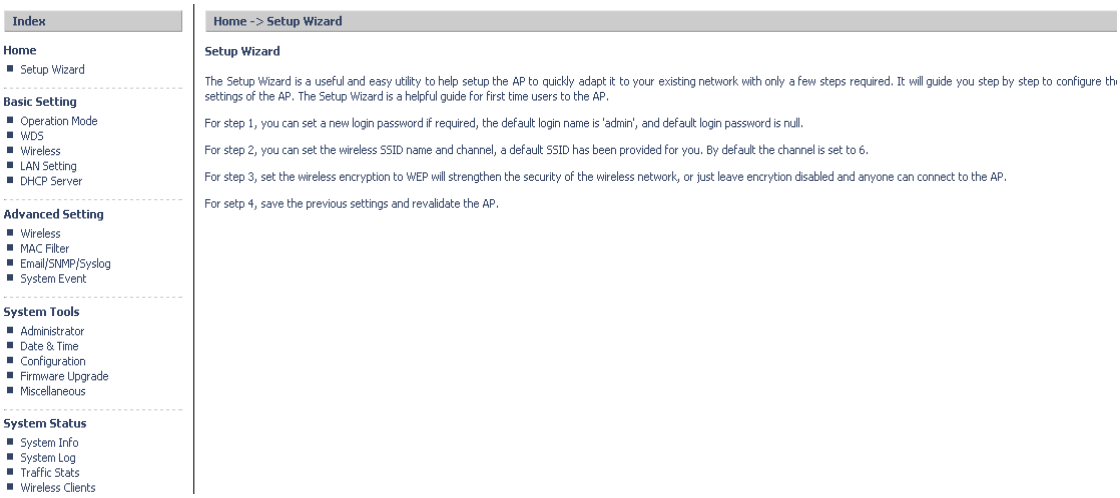
## Wireless Clients


System Status --> Wireless Clients
List of connected wireless clients.
Mac Address | Send | Receive | Current TxRate
00:20:b3:10:24:8d | 2825 Bytes | 4097 Bytes | 54 Mbps
Refresh

This page of the list displays the **Mac Address** of the wireless clients connected. **Current TX Rate** is corresponding to the **Transmission Rate** in the **Advanced Setting > Wireless** pages.

## 5.5.5 Online Help

Click on any item in the **Online Help** screen for more information.


Index
Home
Setup Wizard
Basic Setting
Operation Mode
WDS
Wireless
LAN Setting
DHCP Server
Advanced Setting
Wireless
MAC Filter
Email/SNMP/Syslog
System Event
System Tools
Administrator
Date & Time
Configuration
Firmware Upgrade
Miscellaneous
System Status
System Info
System Log
Traffic Stats
Wireless Clients
Home -> Setup Wizard
Setup Wizard
The Setup Wizard is a useful and easy utility to help setup the AP to quickly adapt it to your existing network with only a few steps required. It will guide you step by step to configure th
settings of the AP. The Setup Wizard is a helpful guide for first time users to the AP.
For step 1, you can set a new login password if required, the default login name is 'admin', and default login password is null.
For step 2, you can set the wireless SSID name and channel, a default SSID has been provided for you. By default the channel is set to 6.
For step 3, set the wireless encryption to WEP will strengthen the security of the wireless network, or just leave encrytion disabled and anyone can connect to the AP.
For setp 4, save the previous settings and revalidate the AP.

# Technical Specifications

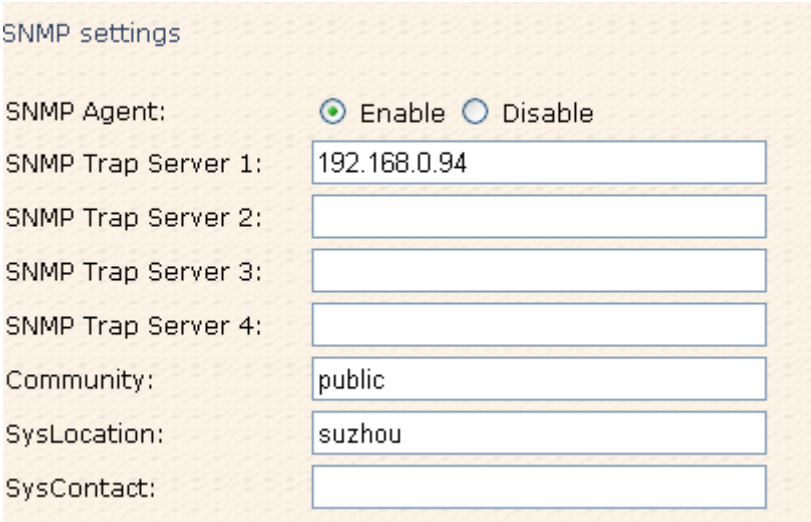
| | |
|---|---|
| **LAN Interface** | |
| RJ45 Ports | 2 x 10/100Base-T(X), Auto MDI/MDI-X |
| PoE P.D. (Power Device) | Present at ETH2 of IAP-120+<br>ETH2 act as Power Device (IEEE802.3af):<br>IEEE 802.3af compliant input interface<br>Power consumption: 8Watts max.<br>Over load & short circuit protection<br>Isolation Voltage: 1000 VDC min.<br>Isolation Resistance: $10^8$ ohms min |
| Protocols | IP, TCP, UDP, DHCP, BOOTP, ARP/RARP, DNS, SNMP MIB II, HTTPS, SNMPV1/V2, Trap, Private MIB |
| **WLAN Interface** | |
| Operating Mode | AP/Bridge/Repeater/AP-Client/Client |
| Antenna Connector | Reverse SMA |
| Radio Frequency Type | DSSS |
| Modulation | IEEE802.11b: CCK, DQPSK, DBPSK<br>IEEE802.11g: OFDM with BPSK, QPSK, 16QAM, 64QAM |
| Frequency Band | (US)America/FCC: 2.412~2.462 GHz (11channels)<br>(EU)Europe CE/ETSI: 2.412~2.472 GHz (13channels)<br>(JP)Japan:2.412~2.484 GHz (13Channels) |
| Transmission Rate | IEEE802.11b: 1/2/5.5/11 Mbps<br>IEEE802.11g: 6/9/12/18/24/36/48/54 Mbps |
| Transmit Power | IEEE802.11b/g: 20dBm |
| Receiver Sensitivity | -81dBm@11Mbps, PER< 8%;<br>-64dBm@54Mbps, PER< 10% |
| Encryption Security | WEP: (64-bit, 128-bit key supported)<br>WPA:<br>WPA2:802.11i (WEP and AES encryption)<br>PSK (256-bit key pre-shared key supported)<br>TKIP encryption |
| Wireless Security | SSID broadcast disable |

| | |
|---|---|
| LED Indicators | PWR 1(2) (PoE, IAP-120+) / Ready:<br>1) Red On: Power is on and booting up.<br>2) Green On: Power is on and functioning normally.<br>ETH1 (2) Link / ACT:<br>Orange ON/Blinking: 10 Mbps Ethernet<br>Green ON/Blinking: 100 Mbps Ethernet<br>WLAN Link/ACT: Green<br>WLAN Strength:1<25%, 2<50%, 3<75%, 4<100%<br>Fault: Power or LAN link down (Red) |
| **Power Requirements** | |
| Power Input Voltage | Dual power inputs PWR1/2: 12 ~ 48VDC in 6-pin Terminal Block |
| Reverse Polarity Protection | Present |
| Power Consumption | 6 Watts |
| **Environmental** | |
| Operating Temperature | -10 to 55°C |
| Storage Temperature | -40 to 85°C |
| Operating Humidity | 5% to 95%, non-condensing |
| **Mechanical** | |
| Dimensions(W x D x H) | 52 mm(W)x 106 mm(D)x 144 mm(H) |
| Casing | IP-30 protection |
| **Regulatory Approvals** | |
| Regulatory Approvals | FCC Part 15, CISPER (EN55022) class A |
| EMS | EN61000-4-2 (ESD), EN61000-4-3 (RS),<br>EN61000-4-4 (EFT), EN61000-4-5 (Surge),<br>EN61000-4-6 (CS) |
| Shock | IEC 60068-2-27 |
| Free Fall | IEC 60068-2-32 |
| Vibration | IEC 60068-2-6 |
| **Warranty** | 3 years |

# APPENDIX A

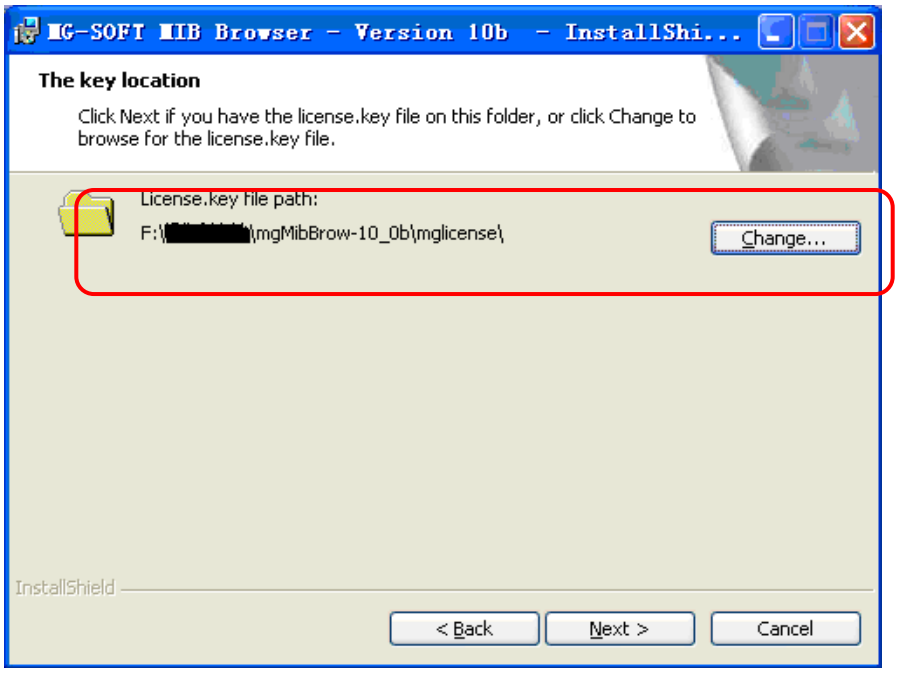
## How to configure SNMP MIB and use SNMP in the PCs?

**Step 1,** Set Enable about the SNMP inn the web of Advanced Setting→Email/SNMP/Syslog, and input the IP address of the PC used for SNMP trap server.

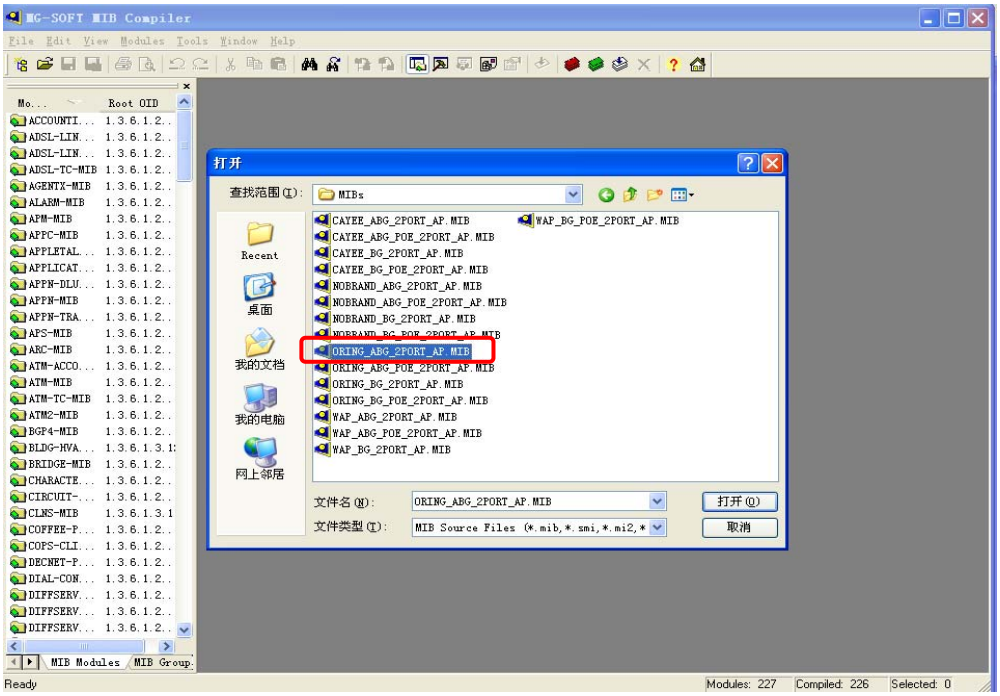



**Step 2,** In the PC, you should setup the SNMP trap server. This here, we use MG-SOFT for example.

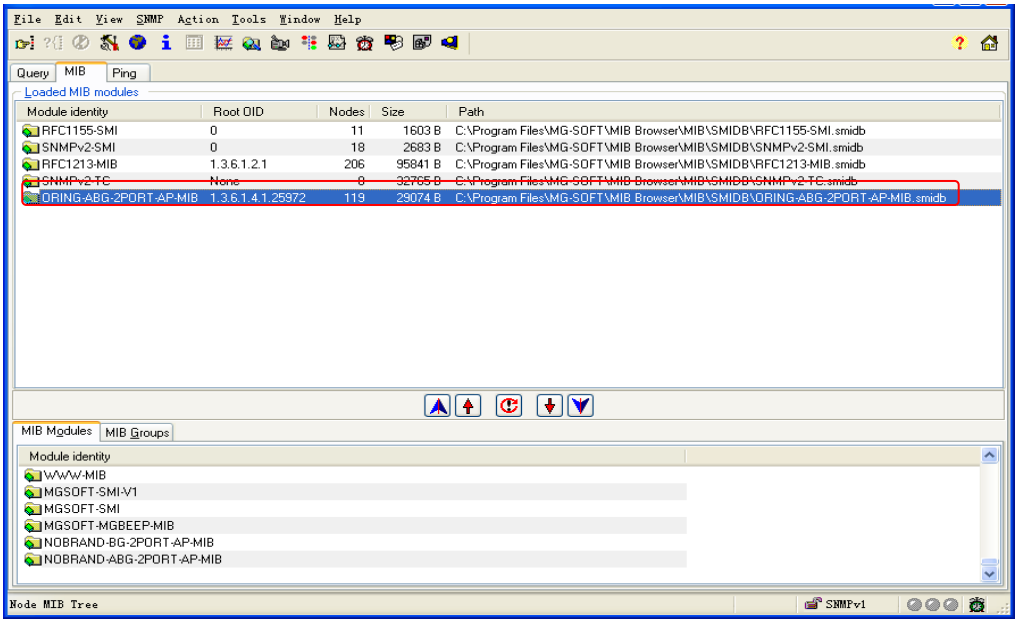
1. The location of the License should configure right during the process of the installation.


MG-SOFT MIB Browser - Version 10b - InstallShi...
The key location
Click Next if you have the license.key file on this folder, or click Change to browse for the license.key file.
License.key file path:
F:\[redacted]\mgMibBrow-10_0b\mglicense\
Change...
InstallShield
< Back
Next >
Cancel

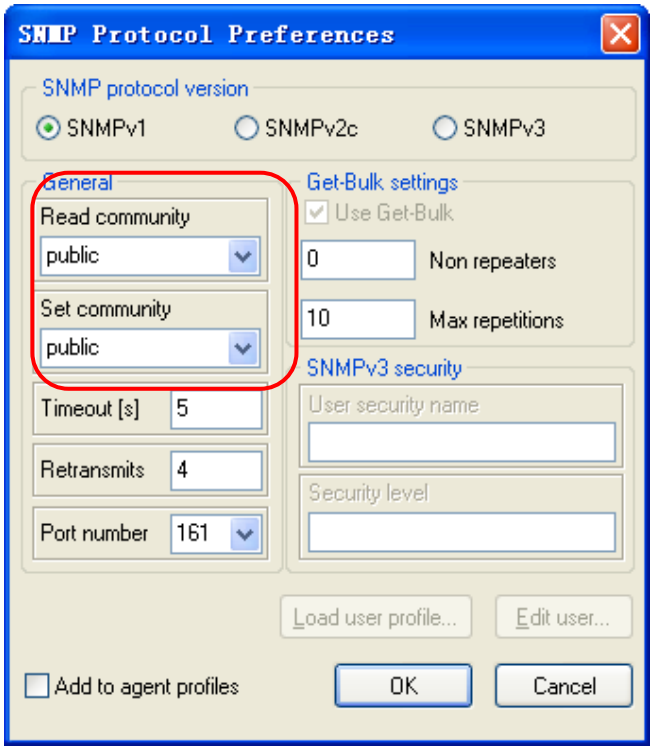
2. After the installation, click into MIB Compile to add the MIB files(for example, the Oring 802.11a/b/g and no PoE FW), and save the configuration.



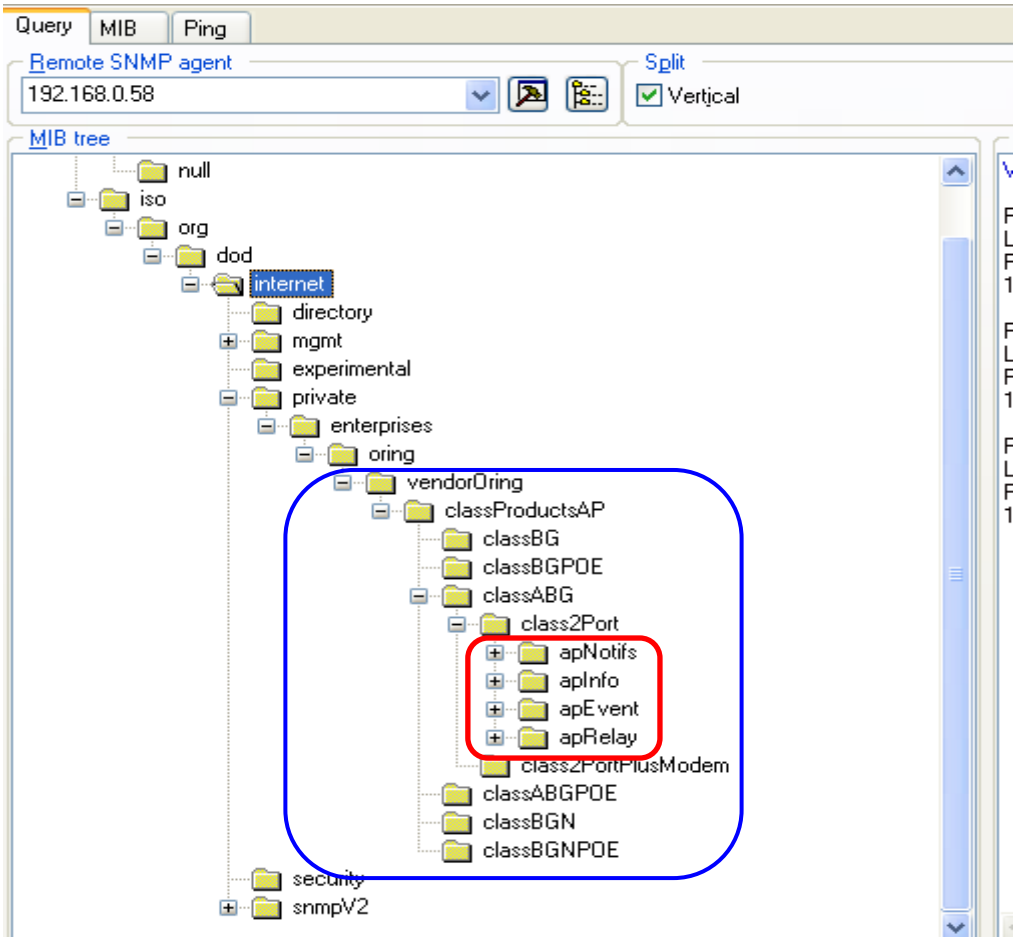

3. Open MIB Brower and select the list of MIB, then select the ORING-ABG-2Port-AP-MIB which in the MIB Modules to add in the Loaded MIB modules.


File Edit View SNMP Action Tools Window Help
Query MIB Ping
Loaded MIB modules
Module identity Root OID Nodes Size Path
RFC1155-SMI 0 11 1603 B C:\Program Files\MG-SOFT\MIB Browser\MIB\SMIDB\RFC1155-SMI.smidb
SNMPv2-SMI 0 18 2683 B C:\Program Files\MG-SOFT\MIB Browser\MIB\SMIDB\SNMPv2-SMI.smidb
RFC1213-MIB 1.3.6.1.2.1 206 95841 B C:\Program Files\MG-SOFT\MIB Browser\MIB\SMIDB\RFC1213-MIB.smidb
SNMPv2-TC None 8 32765 B C:\Program Files\MG-SOFT\MIB Browser\MIB\SMIDB\SNMPv2-TC.smidb
ORING-ABG-2PORT-AP-MIB 1.3.6.1.4.1.25972 119 29074 B C:\Program Files\MG-SOFT\MIB Browser\MIB\SMIDB\ORING-ABG-2PORT-AP-MIB.smidb
MIB Modules MIB Groups
Module identity
WWW-MIB
MGSOFT-SMI-V1
MGSOFT-SMI
MGSOFT-MGBEEP-MIB
NOBRAND-BG-2PORT-AP-MIB
NOBRAND-ABG-2PORT-AP-MIB
Node MIB Tree
SNMPv1

4. Click into Query list in the MIB Brower, and input the IP address of the AP in the Remote SNMP agent→ click "Apply", there is an alarm box which let you enter the right community.

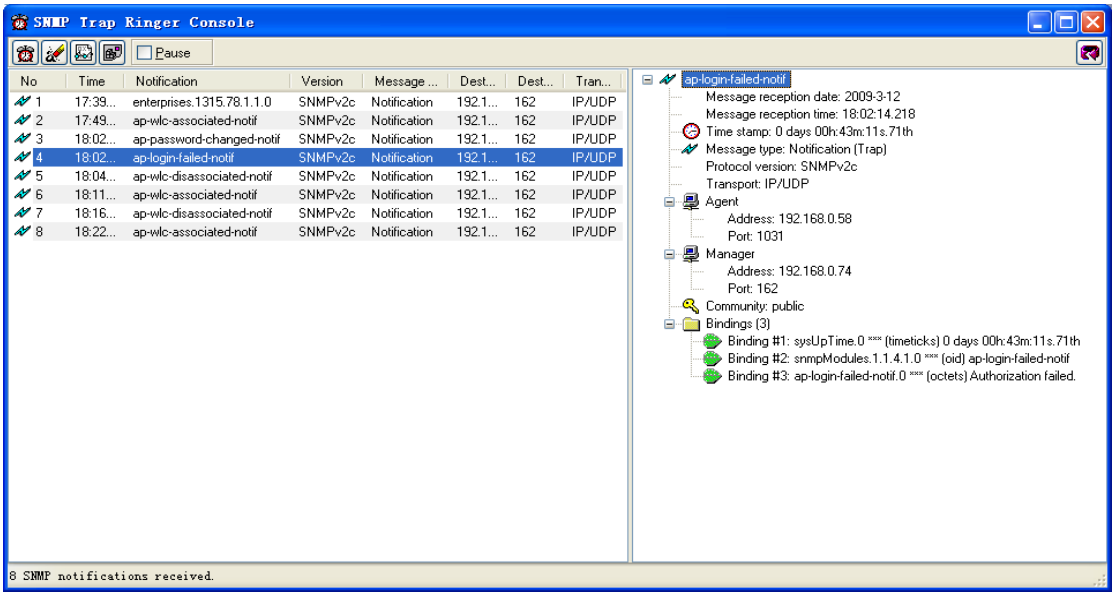



5. After all the settings, you can see the information about the Oring AP in the MIB Tree.



**Step 3,** Be familiar with SNMP information

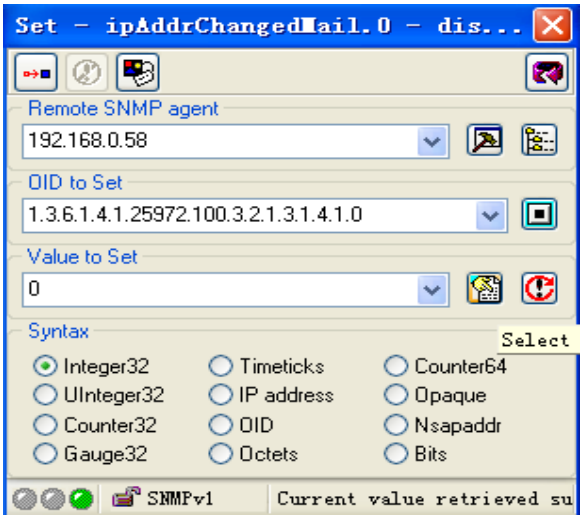
1. The **apNotifs** list will show the trap box. To modify password as an example→ select the SNMP Trap option in the **Advanced Setting→System Event** page→ modify the password in the page of Administrator→ it will be have trap box in the SNMP.


SNMP Trap Ringer Console
Pause
No Time Notification Version Message ... Dest... Dest... Tran...
1 17:39... enterprises.1315.78.1.1.0 SNMPv2c Notification 192.1... 162 IP/UDP
2 17:49... ap-wlc-associated-notif SNMPv2c Notification 192.1... 162 IP/UDP
3 18:02... ap-password-changed-notif SNMPv2c Notification 192.1... 162 IP/UDP
4 18:02... ap-login-failed-notif SNMPv2c Notification 192.1... 162 IP/UDP
5 18:04... ap-wlc-disassociated-notif SNMPv2c Notification 192.1... 162 IP/UDP
6 18:11... ap-wlc-associated-notif SNMPv2c Notification 192.1... 162 IP/UDP
7 18:16... ap-wlc-disassociated-notif SNMPv2c Notification 192.1... 162 IP/UDP
8 18:22... ap-wlc-associated-notif SNMPv2c Notification 192.1... 162 IP/UDP
ap-login-failed-notif
Message reception date: 2009-3-12
Message reception time: 18:02:14.218
Time stamp: 0 days 00h:43m:11s.71th
Message type: Notification (Trap)
Protocol version: SNMPv2c
Transport: IP/UDP
Agent
Address: 192.168.0.58
Port: 1031
Manager
Address: 192.168.0.74
Port: 162
Community: public
Bindings (3)
Binding #1: sysUpTime.0 *** (timeticks) 0 days 00h:43m:11s.71th
Binding #2: snmpModules.1.1.4.1.0 *** (oid) ap-login-failed-notif
Binding #3: ap-login-failed-notif.0 *** (octets) Authorization failed.
8 SNMP notifications received.

2. The apInfo shows the basic information of the AP. To apSignalStrengthInfo as an example, right-click select "Get" on access to the Signal Strength information.

| Shows in SNMP： | Shows in the web page |
|---|---|
| **Response binding:**<br>1: apSignalStrengthInfo.0 (octet string) 100<br>[31.30.30 (hex)] | Signal Strength: 100% |

3. The apEvent shows the same content with the page of the System Event and you can also configure the options. To PAddrChangedMail in the ipAddrChanged for example→now. status is in selected and the SNMP value is 1→ Set the SNMP value to 0, then the web page will be not selected.




4. Also have the relevant information, you can right-click "Properties" to view a specific property features.